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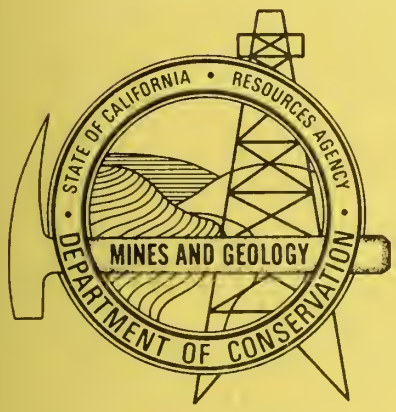

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SPECIAL PUBLICATION 95

MINERALS FOR INDUSTRY

SOUTHERN CALIFORNIA
VOLUME III

SUMMARY OF GEOLOGICAL SURVEY OF 1955–1961

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DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY
1416 Ninth Street
Sacramento, California 95814

FOREWORD

The "Minerals for Industry" economic geology series was originally published by the Southern Pacific Company in 1964. The three volumes soon became popular references for prospectors and mining companies throughout California and the western states.

In 1986 the Division of Mines and Geology (DMG) purchased several hundred copies of Volumes II and III of "Minerals for Industry" from Santa Fe Mining Company, which is no longer interested in marketing them, and secured permission from Santa Fe Southern Pacific Corporation to re-release the two volumes as DMG Special Publications. Only Volume II (Northern California) and Volume III (Southern California) of the three-volume series is being re-released by DMG. (Volume I, which treats northern Nevada and northwestern Utah, has not been purchased and will not be distributed by DMG.) The two volumes have been made available at a price that will cover the cost of purchasing and re-releasing them.

In this re-release, new overleaf covers and title pages have been added to facilitate distribution through normal DMG channels. Otherwise, the volumes are exactly as originally released in 1964.

The Division of Mines and Geology has released the two volumes in this way because, although dated, they remain a useful source of information on the mineral geology of California.

CONTENTS

Page

INTRODUCTION 3

ACKNOWLEDGEMENTS 5

COMPILATION OF MINERAL COMMODITIES 7
Classification 7
Method of Listing and Referencing 7
Limitations 8

PART I—San Joaquin Valley

METALLICS 11
Chromium 11
Copper 12
Gold 12
Manganese 13
Mercury 13
Tungsten 15
Uranium, Thorium, and Rare Earths 16

INDUSTRIAL ROCKS AND MINERALS 19
Asbestos 20
Bituminous Rock 21
Broken Stone 21
Clays 21
Coal and Lignite 21
Decorative and Dimension Stone 22
Gypsum and Gypsite 22
Magnesite 25
Sand and Gravel 27

REFERENCES 31

GEOLOGIC HISTORY 33
Selected Bibliography 33

PART II—Western Mojave Desert

METALLICS 38
Copper 38
Gold 42
Iron 55
Lead 55
Manganese 56
Silver 57
Tungsten 60
Uranium 61
Zinc 63

Page

INDUSTRIAL ROCKS AND MINERALS 65
Abrasives 65
Barite 66
Boron 67
Broken Stone 69
Clays 70
Decomposed Granite 73
Decorative and Dimension Stone 73
Dolomite 74
Feldspar 74
Fluorite 75
Gypsum and Gypsite 75
Limestone 76
Magnesite 77
Marl 78
Mica 78
Perlite 79
Pumice, Pumicite, Tuff, and Volcanic Cinders 81
Pyrophyllite 83
Quartz 85
Salt 85
Sand and Gravel 85
Semiprecious Stones 87
Strontium 88

REFERENCES 90

GEOLOGIC HISTORY 92
Selected Bibliography 92

PART III—Eastern Mojave and Colorado Deserts

METALLICS 101
Antimony 101
Copper 102
Gold 111
Iron 129
Lead 135
Lithium 137
Manganese 137
Mercury 141
Nickel 141
Silver 141
Tungsten 151
Uranium, Thorium, and Rare Earths 154
Vanadium 155
Zinc 156

Page
INDUSTRIAL ROCKS AND MINERALS 157
Abrasives 159
Barite 160
Boron 161
Broken Stone 162
Carbon Dioxide 165
Clays 165
Decomposed Granite 169
Decorative and Dimension Stone 169
Dolomite 170
Feldspar 171
Fluorite 172
Gypsum and Gypsite 173
Limestone 174
Magnesite 176
Mica 179
Perlite 179
Pumice, Pumicite, Tuff, and Volcanic Cinders 180
Quartz 182
Salines 183
Calcium Chloride 183
Potassium Chloride 184
Sodium Chloride 185
Sodium Sulphate 186
Sand and Gravel 186
Semiprecious Stones 189
Silica 189
Strontium 189
Talc 190
Wollastonite 190

GEOTHERMAL RESOURCES 193
Geothermal Wells 193
Thermal Wells 195
Hot Springs 196
Mud Volcanoes and Mud Pots 196
Geothermal Trends 196

REFERENCES 197

WATER RESOURCES (also includes the PART II area) 199
Springs 200
Wells 203
Surface Water Discharge Data 236

GEOLOGIC HISTORY 238

INDEX TO MINES 239

FIGURES

1 Areas Covered by Geologic Mapping 1
2 Index Map 2

Page
3 Organization Diagram 4
4 Carbon Dioxide Production 166
5 Cross Section through IID #1 Geothermal Well 194

TABLES

Page
1 Thermal Wells 195
2 Hot Springs 196
3 Mud Volcanoes and Mud Pots 196
4 Springs 200
5 Wells 203
6 Surface Water Discharge Data 236

PHOTOGRAPHS

Page
Mercury Area 10
Asbestos Plant 18
Sand and Gravel Pit 26
Borax Open Pit and Plant 64
Pumice Pit 82
Quartz Deposit 84
Iron Mine 100
Amboy Crater 158
Mica Schist Deposit 178
Geothermal Well 192

MAPS

PART I

Mineral Commodity Map I. . . . . Map Pocket

PART II

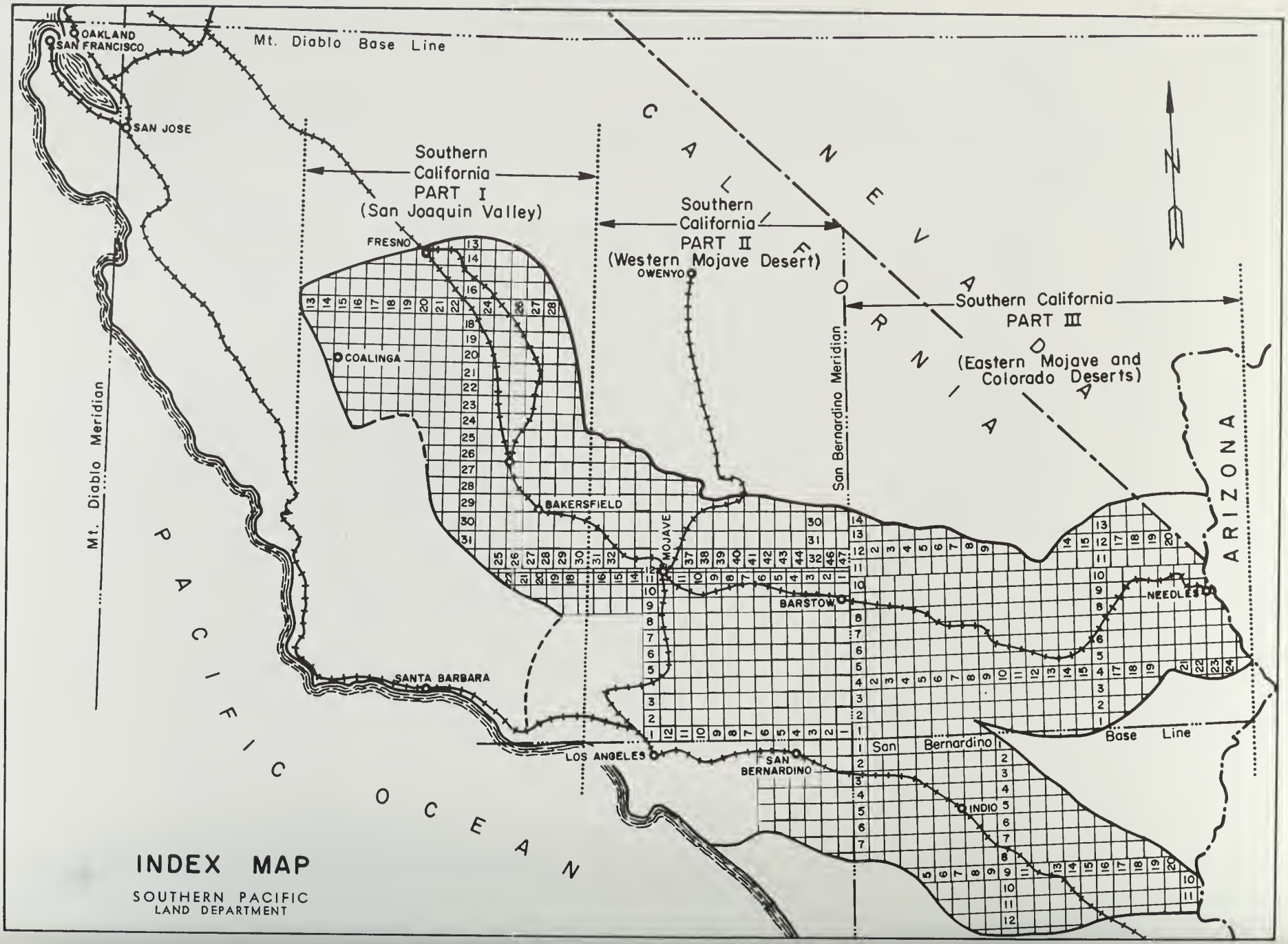
Mineral Commodity Map II . . . . . Map Pocket

PART III

Mineral Commodity Map III
Mineral Commodity Map IV . . . . . Map Pocket

Figure 1

SOUTHERN PACIFIC
LAND DEPARTMENT



INDEX MAP

SOUTHERN PACIFIC
LAND DEPARTMENT

Introduction

Southern Pacific's economic geology survey in California, Nevada and Utah was conducted from early 1955 to mid-1961. Results of the survey are summarized in three *MINERALS FOR INDUSTRY* volumes:

NORTHERN CALIFORNIA

Part I—Northern Sierra Nevada

Part II—Klamath Mountains and Cascade Range

SOUTHERN CALIFORNIA

Part I—San Joaquin Valley

Part II—Western Mojave Desert

Part III—Eastern Mojave and Colorado Deserts

NORTHERN NEVADA AND NORTHWESTERN UTAH

Part I—Western Area

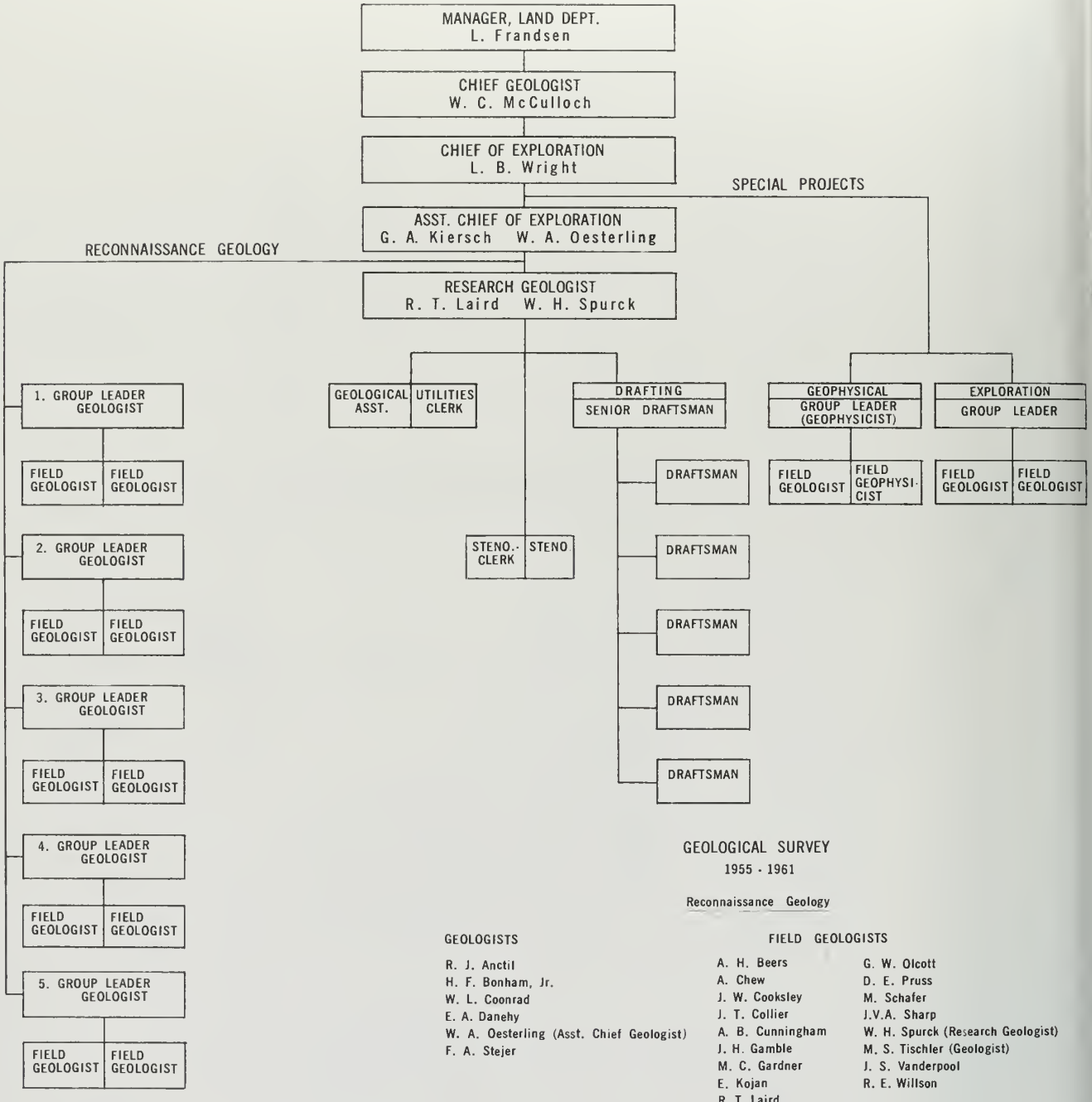
Part II—Central and Eastern Area

Areas covered by the survey are illustrated on Figure 1. The townships and ranges of the Mount Diablo and San Bernardino Base Lines and Meridians, which are included in Parts I, II, and III of this SOUTHERN CALIFORNIA volume, are shown on Figure 2.

During the survey, the areal geology of 13.3 million acres, approximately one-third Company owned, in California, Nevada, and Utah was mapped at a scale of 2,000 feet to the inch. Economic geology has been recorded on some 550 detailed topographic maps, which also illustrate elements of culture and Company ownership. Reports on the geology and mineral resources, except oil and gas, have been written for each map area. Reconnaissance investigation was followed by detailed field work at selected sites, and large-scale maps and accompanying reports were prepared. All maps and reports, with supporting data, are on file at the Land Department, Southern Pacific Company, San Francisco, California.

Mineral Commodity Maps I, II, III, and IV (map pocket) show the general locations of deposits summarized herein. Information relative to leasing of Company properties is available from the Land Department; however, it is not in position to furnish title information on other properties.

ORGANIZATION DIAGRAM
SOUTHERN PACIFIC COMPANY, LAND DEPT., GEOLOGICAL SURVEY



GEOLOGICAL SURVEY
1955 - 1961

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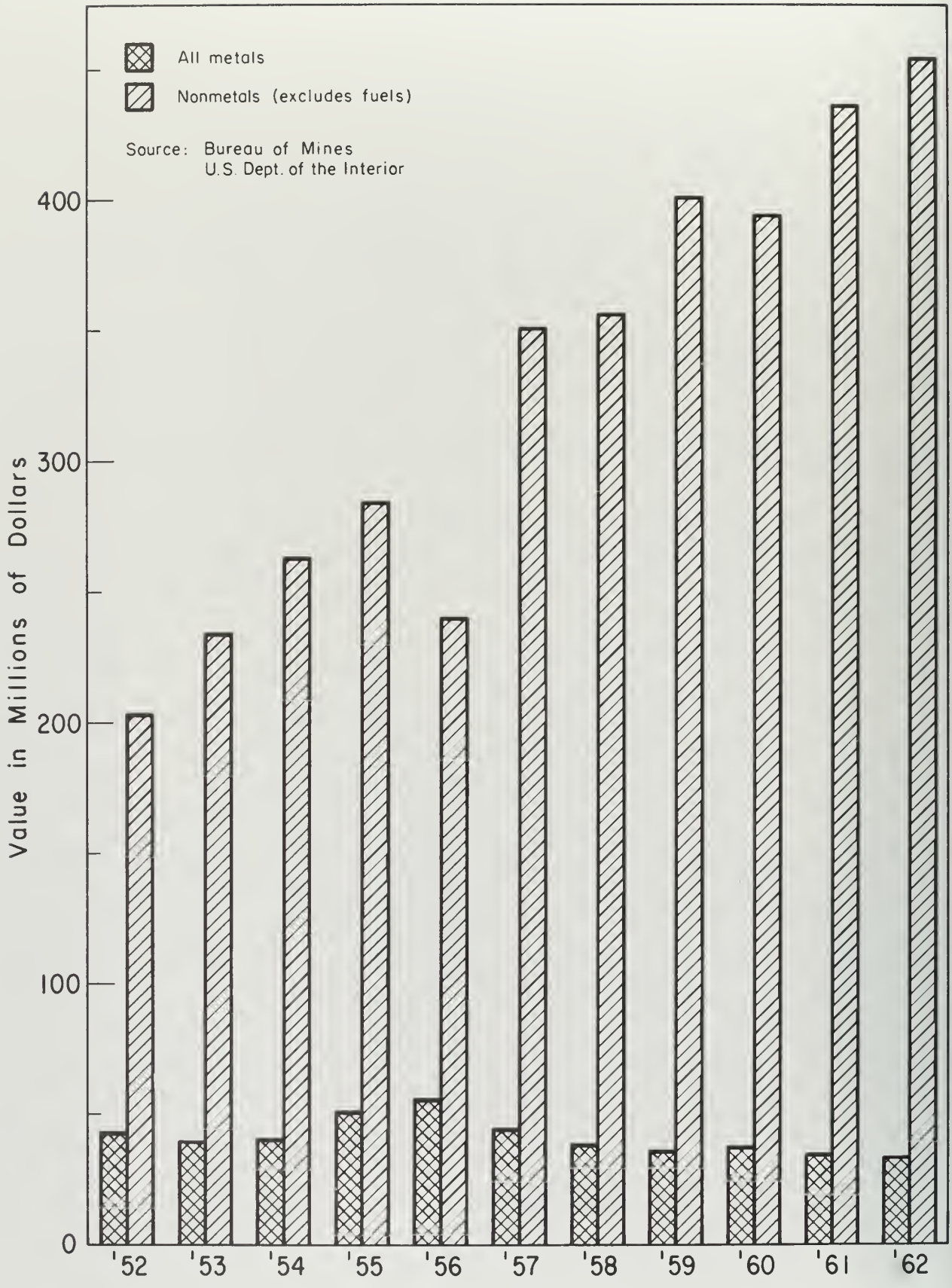
Figure 3

Acknowledgements

The office and field staff assembled by the Land Department is shown on the Organization Diagram (Figure 3), and the persons employed in these positions from time to time are listed.

Authors of this volume are listed on the title pages for PARTS I, II and III. This volume was edited by W. C. McCulloch, W. A. Oesterling, W. H. Spurck, and M. S. Tischler. The multitude of clerical details involved in proper assembly of the manuscript and editing gallies and page proofs were efficiently handled by Mrs. Marilou Lockhart.



CALIFORNIA MINERAL PRODUCTION

Compilation of Mineral Commodities

CLASSIFICATION

Commodity information is presented in condensed form under four major headings:

METALLICS—potential sources of metals.

INDUSTRIAL ROCKS AND MINERALS—all mineral commodities exclusive of metallics, mineral fuels, and water resources.

WATER RESOURCES—springs, wells, and surface water discharge data.

GEOTHERMAL RESOURCES—potentially useful sites for the production of natural steam, hot water, and valuable minerals in brine.

METALLICS and INDUSTRIAL ROCKS AND MINERALS are further classified under one of the following subheadings:

Mines and Prospects—locations at which mining, development, or exploration has been undertaken.

Occurrences—commodity locations at which no physical exploration has been undertaken.

Trends—possible mineral locations projected from mines, prospects, or occurrences.

METHOD OF LISTING AND REFERENCING

Mineral commodities listed under METALLICS and INDUSTRIAL ROCKS AND MINERALS are presented in alphabetical order.

Mineral locations for each commodity are listed primarily in order of increasing townships and secondarily by increasing ranges. "MDBM" refers to Mount Diablo Base Line and Meridian, and "SBBM" to San Bernardino Base Line and Meridian (see Figure 2). Order of listing within the three parts of this volume is as follows:

PART I—South and East, MDBM
North and West, SBBM

PART II—South and East, MDBM
North and West, SBBM

PART III—North and East, SBBM
South and East, SBBM

Deposits within the U. S. Marine Corps Training Center (see Mineral Commodity Map III) are omitted from this compilation.

Numbers in italics to right of each location are keyed to numbered reference lists for each of the three parts of this volume.

LIMITATIONS

Mineral locations listed herein are those described by Southern Pacific geologists in the course of investigation of Company lands and contiguous areas, and obtained from published literature. This listing does not comprise a complete inventory of all mineral locations which may occur within the report area. The analyses and other test data reported are not necessarily representative inasmuch as an attempt was made to select the highest-grade material for preliminary analysis. Conclusions are made solely with respect to property owned by the Company,[1] and it is not the intent of Southern Pacific to evaluate properties it does not own.

At some of the listed locations, "ore-grade" material was found, but not in sufficient tonnage for economic operation. At others, material in sight is too low grade to constitute ore under present economic conditions regardless of available tonnage; or profitable exploitation is dependent on technological advances. Conclusions as to the economics of operating any mineral property should be based on the availability of markets for products at favorable sales price and cost.

[1] Deposits at locations indicated by * are not owned by Southern Pacific.

PART I

San Joaquin Valley

By: W. H. Spurck, *Research Geologist*

PART I encompasses areas mapped by Southern Pacific within:
Townships 13-32 South, Ranges 13-30 East, MDBM.
Townships 11-12 North, Ranges 19-20 West, SBBM.
See Mineral Commodity Map I in map pocket.
See page 31 for *References*.

Looking southeast from Kings Mine mercury retorts in Sec. 20, towards Little Kings mine area in Sec. 29, T.23S., R.16E., MDBM, Kings County.

Metallics

Deposits[1] of metallic mineral commodities are of limited extent, and those of economic importance are of relatively high unit value as contrasted with industrial rocks and minerals. Metallics are commonly associated with igneous intrusives and are usually localized along fractures.

Most metallic ores and concentrates of ores are sold by producers to ore buyers and processors somewhat below quoted market price. The difference reflects the costs and profits of such buyers. There are variations in price from time to time depending on quality, quantity, and demand.

Noteworthy metallic mineral deposits on Company land in the PART I area are:

MERCURY:

$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 19, T.23S., R.16E., MDBM, Kings Co.
$NE\frac{1}{4}$ Sec. 29, T.23S., R.16E., MDBM, Kings Co.

CHROMIUM [Cr]

MINES AND PROSPECTS

Name: Mistake (*Koski Group, Butler Estate, James-Thickstun*)

Location: *$S\frac{1}{2}S\frac{1}{2}SW\frac{1}{4}$ Sec. 34, T.18S., R.13E., MDBM, Fresno Co. (1,13)

Description: active from about 1900 to 1958; 250′ deep open pit; 202 carloads of concentrates and lump ore valued at $350,000 shipped Sept. 1956–May 1958; associated 0.5% Hg values reported

Geology: highly sheared serpentinite on upthrown side of Archer fault contains chromite segregations in a pipe-like body 50′ in diameter

Name: Railroad

Location: $SE\frac{1}{4}NW\frac{1}{4}$ Sec. 1, T.19S., R.13E., MDBM, Fresno Co. (1)

[1] Deposits at locations indicated by * are not owned by Southern Pacific.

Description: two open cuts, one 105′ by 50′ and the other 120′ by 70′; about 60 tons shipped 1955–56; concentrates averaged 49% Cr, 13% Fe, 5.4% SiO_2, with Cr:Fe of 2.5:1; drilled prior to establishment of asbestos mill in 1961

Geology: chromite float in serpentine landslide debris

Conclusions: shows little promise

Location: *NE¼NE¼ Sec. 30, T.23S., R.16E., MDBM, Kings Co. (1)

Description: drill holes

Geology: disseminated chromite

OCCURRENCES

Location: NE¼ Sec. 29, T.23S., R.16E., MDBM, Kings Co. (1)

Geology: chromite float

Conclusions: shows little promise

COPPER [Cu]

MINES AND PROSPECTS

Name: Round Valley

Location: *E½NE¼SE¼SE¼ Sec. 4, T.20S., R.27E., MDBM, Tulare Co. (1,7,9,17)

Description: 30′ shaft and caved adit; active 1916

Geology: azurite and malachite with minor bornite and chalcopyrite along a N-trending, 3′ wide shear zone between serpentinized schist and gabbro

Location: *NW¼NW¼NE¼ Sec. 26, T.23S., R.15E., MDBM, Monterey Co. (1,12)

Description: several trenches and short adit

Geology: malachite and azurite on dump; native copper reported along shear zones in highly altered serpentinite

Name: Gem

Location: *SW¼ Sec. 34, T.29S., R.30E., MDBM, Kern Co. (16)

Description: pits

Geology: contact between schist and sandstone

GOLD [Au]

MINES AND PROSPECTS

Location: *NE¼NE¼SW¼NE¼ Sec. 21, T.15S., R.26E., MDBM, Tulare Co. (9)

Description: two adits, 220′ and 350′ long, and a 100′ winze

Geology: gold in a 3′ wide quartz vein striking N and dipping 75°E in schist

MANGANESE [Mn]

MINES AND PROSPECTS

Name: Cole

Location: *SW¼NE¼ Sec. 32, T.19S., R.27E., MDBM, Tulare Co. (1,9,15)

Description: cut and 30′ shaft exposed about 500 tons in 1958

Geology: 25′ wide and 100′ long siliceous zone between jasper and slate contains manganiferous iron mineralization averaging 18% Mn; slate strikes N20°W, dips 75°SW; selected specimens analysed 35% Mn

OCCURRENCES

Location: *W½NE¼NE¼ Sec. 33, T.19S., R.27E., MDBM, Tulare Co. (1)

Geology: manganiferous siliceous beds (chert?) strike N and NNW in metamorphic rocks

MERCURY [Hg]

MINES AND PROSPECTS

Name: Anita (*Chiquita, Rita*)

Location: *SE¼SW¼ Sec. 17, T.18S., R.13E., MDBM, Fresno Co. (1,6)

Description: 10 lbs. Hg per ton reported mined prior to 1940 from workings 20-40′ below thrust plate in serpentinite; of 1500′ workings, 200′ were open in 1941

Geology: cinnabar blebs and bunches in fractures and minor faults in 6–7′ thick bed of indurated Waltham Canyon sandstone

Name: Del Mexico (*Mexican*)

Location: *SE¼SW¼SW¼ Sec. 22, T.18S., R.13E., MDBM, Fresno Co. (6,13)

Description: cuts and 800′ of underground workings; intermittently active 1860–1958

Geology: parallel, vertical veins and stockworks in a wedge-shaped body of indurated Waltham Canyon sandstone below the New Idria thrust

Location: *E½SE¼NE¼ Sec. 34, T.18S., R.13E., MDBM, Fresno Co. (1)

Description: pit

Geology: mercury in metasedimentary rocks in upper plate and near plane of New Idria thrust

Location: *S½NW¼NW¼ Sec. 35, T.18S., R.13E., MDBM, Fresno Co. (1)

Description: pit

Geology: mercury in metasedimentary rocks in upper plate and near plane of New Idria thrust

Name: Archer

Location: *S½SW¼NW¼NE¼ Sec. 3, T.19S., R.13E., MDBM, Fresno Co. (1,6)

Description: cuts and adits; intermittent activity 1904–1942

Geology: veins containing cinnabar and metacinnabarite in 1–15′ wide shear zones which trend N30°W to N20°E and dip at various angles in Waltham Canyon shale; in hanging wall of Archer fault which trends NE and dips 70°S; Archer fault marked by 5–20′ of sheared serpentinite; veins tend to swell near intersection with fault; lode essentially continuous to 200′ depth

Name: Kings Extension

Location: $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 19, T.23S., R.16E., MDBM, Kings Co. (1,3,10)

Description: workings from adjacent Kings mine extend into this ground and portion of Kings production was from Kings Extension; Hg reported 80–135′ in one drill hole

Geology: extension of fault zone described at Kings

Conclusions: warrants additional exploration

Name: Kings (*Friedana, Table Mountain*) [see photo, page 10]

Location: *$NW\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$ Sec. 20, T.23S., Rge. 16E., MDBM, Kings Co. (1,3,10)

Description: numerous pits, adits, shafts, drifts and stopes, largely filled or caved; total production in excess of 1200 flasks since 1902

Geology: blebs and fracture fillings of cinnabar and native mercury in sandstone and sheared serpentinite which form footwall and hanging wall, respectively, of fault that strikes N60°E and dips 70°N

Name: Avenal Canyon Extension

Location: $E\frac{1}{2}NE\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}$ Sec. 21, T.23S., R.16E., MDBM, Kings Co. (1,3,10)

Description: two trenches; workings from Avenal mine may extend into this ground

Geology: (see under Avenal Canyon, below)

Conclusions: warrants additional exploration

Name: Avenal Canyon (*Francis claim*)

Location: *$W\frac{1}{2}NW\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}$ Sec. 22, T.23S., R.16E., MDBM, Kings Co. (1,3,10)

Description: several hundred lbs. Hg reported mined from 200′ shaft, 80′ and 100′ adits (all caved) and large cut; active early 1930's; two selected samples analysed 2.2 and 5.6 lbs. Hg per ton

Geology: mercury probably associated with NW-trending fault in sandstones

Name: Dawson

Location: *$SE\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$ Sec. 28, T.23S., R.16E., MDBM, Kings Co. (1,3,10)

Description: 50′ wide by 150′ long by 50′deep glory hole and several hundred feet of underground workings; 1076 flasks produced 1918–42, of which 1030 were produced 1918–22; average tenor of 10 lbs. Hg per ton

Geology: mercury, cinnabar and metacinnabarite in serpentinite and silica-carbonate rock in landslide area

Location: $NW\frac{1}{4}$ Sec. 29, T.23S., R.16E., MDBM, Kings Co. (1)

Description: pits, shallow shafts, and adits dating back to 1890; geochemical and magnetic survey conducted 1959–60

Geology: extensive outcrops of silica carbonate with sparse mercury mineralization localized by faulting

Conclusions: warrants further exploration

Name: Little Kings

Location: NE¼ Sec. 29, T.23S., R.16E., MDBM, Kings Co. (1)

Description: about 800 flasks produced 1958–62; ore averaged 9–12 lbs. Hg per ton; adit and 22° incline; additional ore developed by drifting late in 1963

Geology: native mercury, cinnabar and metacinnabarite associated with pyrite and marcasite in silica-carbonate breccia in serpentine; mercury minerals localized by nearly horizontal thrust fault breccia and gouge cappings at and near intersections of high-angle normal faults which strike NE and N75°W

Conclusions: warrants further exploration and development

Name: White

Location: *NE¼NE¼ Sec. 30, T.23S., R.16E., MDBM, Monterey Co. (1,3)

Description: three flasks produced 1916; several shallow cuts and a 150′ adit with 40′ of backs

Geology: cinnabar coatings in fractures in small silica-carbonate body along an E-striking shear zone; mineralization near and in hanging wall of flat NW-trending thrust plate

Name: Rattlesnake

Location: *N½N½ Sec. 30, T.23S., R.16E., MDBM, Monterey Co. (1,3)

Description: adit

Geology: sheared serpentinite

TUNGSTEN [W]

MINES AND PROSPECTS

Name: Indian (*Billwaley, J.H.B., Tom Cat*)

Location: *SW¼SW¼NE¼ Sec. 11, T.15S., R.26E., MDBM, Tulare Co. (9,11)

Description: reported production 1943–44 and 1954 from several cuts and shallow shafts; active 1956; ore shipment of 18.3 tons of 2.54% WO_3 concentrates shipped; average tenor of 0.5–1.0% WO_3 reported

Geology: disseminated scheelite in 3′ wide by 75′ long skarn zone in 800′ long by 40′ wide marble pendant in granodiorite; skarn zone strikes E-W, dips N, and is conformable with bedding in marble

Name: Consolidated

Location: *SW¼SW¼NE¼ Sec. 11, T.15S., R.26E., MDBM, Tulare Co. (9,11)

Description: 33,000 units WO_3 produced from adit leading to glory hole, incline, pit, and placer 1942–1955; placer analyzed 0.3–0.5% WO_3 and concentrates from glory hole ran 2–10% WO_3; several exploratory adits

Geology: scheelite in tactite zone developed along contact of N-trending elongate body of marble and quartz-mica schist enclosed in coarse-grained biotite granite

Name: Blue Ridge

Location: *SW¼NW¼NW¼ Sec. 30, T.23S., R.29E., MDBM, Tulare Co. (9,11)

Description: three 12′ deep pits

Geology: 0.5–1.0% WO_3 in 6–12′ wide by 80′ long tactite zone that strikes N50°W and dips 60°SW along contact of mica schist with granodiorite

TRENDS

Location: W½NW¼SE¼ Sec. 11, T.15S., R.26E., MDBM, Tulare Co. (1)

Geology: possible extension of scheelite-bearing tactite zones present at Consolidated

URANIUM, THORIUM, AND RARE EARTHS

MINES AND PROSPECTS

Name: Lopberg (*Loperna*)

Location: *SW¼SE¼ Sec. 2, T.30S., R.21E., MDBM, Kern Co. (16,20)

Description: two trenches 30′ long and 15′ deep

Geology: yellow secondary uranium minerals in fractures and bedding planes of Miocene siliceous shales

Name: Trail

Location: *SW¼SE¼ Sec. 2, T.30S., R.21E., MDBM, Kern Co. (16)

Description: shallow trenches and pits

Geology: secondary uranium minerals occur as coatings on fractures and bedding planes of Miocene siliceous shale

Name: Surprise

Location: *SW¼NE¼ Sec. 3, T.30S., R.21E., MDBM, Kern Co. (16,20)

Description: 100′ long by 50′ deep trench which is 12′ wide at bottom and 50′ wide at top; several drill holes; maximum reported analysis 0.11% U_3O_8

Geology: coatings and disseminations of autunite and other secondary minerals in brecciated Miocene siliceous shale along a vertical N60°E fault zone within a 40′ wide by 200′ long segment of fault

Name: Gasko Group

Location: *Sec. 33, T.31S., R.22E., MDBM, Kern Co. (16)

Description: two adits, 35 and 40′ long

Geology: autunite as coatings on fractures in NW-trending vertical shear zone in siliceous silty shale

Name: Owen Group

Location: *Sec. 33, T.31S., R.22E., and Sec. 4, T.32S., R.22E., MDBM, Kern Co. (16)

Description: five lode and five placer claims; bulldozed area 300′ by 400′; several shallow trenches and pits; one carload of hand-selected and screened material produced 1956 reportedly assayed 0.16% U_3O_8

Geology: autunite and other yellow secondary uranium minerals widely disseminated in manganese-stained shear zones that trend N50–70°E and dip 70°SE in Miocene gypsiferous shales

Coalinga Asbestos Company's mill in Section 1, T.19S., R.14E., MDBM, Fresno County.

Industrial Rocks and Minerals

Industrial rocks and minerals generally occur in deposits[1] of large volume and are of relatively low unit value. Most of these deposits are easily mined by open-pit methods. Many new uses are being developed for some of these materials, and consumption for conventional uses[2] increases with population and industrial growth. Because deposits of many of these commodities are widespread, proximity to market is a most important factor.

Of the Southern Pacific properties listed in the Part I area, the following industrial rock and mineral deposits are considered most promising:

ASBESTOS:

N½ Sec. 25, T.23S., R.15E., MDBM, Monterey Co.; S½ Sec. 19, Lots 1 to 10 and N½SW¼ Sec. 29, and SW¼ Sec. 33, T.23S., R.16E., MDBM, Kings Co.

GYPSUM AND GYPSITE:

E½ and E½W½ Sec. 25, T.28S., R.28E., MDBM, Kern Co.
SE¼SW¼ Sec. 32, T.30S., R.22E., MDBM, Kern Co.

SAND AND GRAVEL:

NW¼SW¼NE¼, SE¼SW¼NE¼, S½SE¼NE¼, NW¼SW¼NW¼, SW¼NW¼NW¼, and N½-NE¼SE¼ Sec. 35, T.28S., R.28E., MDBM, Kern Co.
N½, N½NW¼SE¼, SE¼NW¼SE¼ and NE¼SE¼ Sec. 9, T.29S., R.29E., MDBM, Kern Co.
E½SW¼SE¼, W½SE¼SE¼ and SE¼SE¼SE¼ Sec. 13, T.29S., R.29E., MDBM, Kern Co.
NW¼NE¼NE¼ Sec. 13, T.29S., R.29E., MDBM, Kern Co.
N½N½SW¼ Sec. 19, T.29S., R.30E., MDBM, Kern Co.

[1] Deposits at locations indicated by * are not owned by Southern Pacific.
[2] Information regarding conventional uses for many commodities was abstracted from:
Wright, L. A., ed., 1957, Mineral commodities of California: Calif. Div. Mines Bull. 176, 736 p.
Bates, R. L., 1960, Geology of industrial rocks and minerals, Harper & Bros., New York.
U. S. Bur. Mines, 1960, Mineral facts and problems (Bull. 585), 1016 p.

ASBESTOS

MINES AND PROSPECTS

Name: Atlas (*Hidden Splendor*)

Location: *W½NW¼ Sec. 32, T.18S., R.13E., MDBM, Fresno Co. (1)

Description: open pit and 15,000 ton-per-year mill

Geology: short fiber chrysotile asbestos disseminated throughout serpentine mass

Name: Coalinga Asbestos (see photo, page 18)

Location: *SE¼ Sec. 34, T.18S., R.13E. (open pit), and NW¼ Sec. 1, T.19S., R.14E. (mill), MDBM, Fresno Co. (1)

Description: open pit and 12,000 ton-per-year mill

Geology: short fiber chrysotile asbestos disseminated throughout serpentine mass

Location: *NW¼NE¼SE¼ Sec. 34, T.18S., R.13E., MDBM, Fresno Co. (1)

Description: bulldozer trench in 1958

Geology: short cross-fiber asbestos occurs in form of mountain leather (chrysotile and talc mixture) and is disseminated throughout serpentine mass

Name: Todd

Location: *NW¼ Sec. 3(?), T.19S., R.13E., MDBM, Fresno Co. (1)

Description: pit

Geology: short fiber chrysotile asbestos disseminated throughout serpentine mass

Location: N½ Sec. 25, T.23S., R.15E., MDBM, Monterey Co.; S½ Sec. 19, Lots 1 to 10 and N½SW¼ Sec. 29, and SW¼ Sec. 33, T.23S., R.16E., MDBM, Kings Co. (1)

Description: 66 four-inch auger holes drilled to about 50′ depth in 1963

Geology: chrysotile veinlets in serpentine

Conclusions: preliminary drilling favorable; warrants further exploration

OCCURRENCES

Location: *Secs. 18, 19, 20, 21, 27, 28, 29, 30, 31, 32, 33 and 34, T.18S., R.13E., and Secs. 2, 3, 4, 5, and 6, T.19S., R.13E., MDBM, Fresno Co. (1)

Geology: short fiber chrysotile asbestos disseminated throughout serpentine mass

Location: *Secs. 3, 11, 13, and 14, T.18S., R.14E., MDBM, Fresno Co. (1)

Geology: short fiber chrysotile asbestos disseminated throughout reworked serpentine in Big Blue member of the Temblor fm.

Location: *NE¼NE¼ Sec. 30, T.23S., R.16E., MDBM, Monterey Co. (1)

Geology: minor showings of chrysotile asbestos in drill holes to 270′

BITUMINOUS ROCK

MINES AND PROSPECTS

Name: McKittrick

Location: *SW¼NW¼SW¼, NE¼SE¼SW¼, and NE¼NW¼SW¼ Sec. 27, SE¼NW¼NE¼ and NE¼NE¼SE¼ Sec. 28, and N½NE¼NE¼ Sec. 29, T.30S., R.22E., MDBM, Kern Co. (14)

Description: adits and shafts; reserves of 8,500,000–15,700,000 tons of bituminous material reported; deposits average about 10% bitumen or about 24 gallons/ton; used locally for road surfacing

Geology: asphalt seeps, asphaltic alluvium, asphalt veins and bituminous sandstone localized along E-W fault zone

BROKEN STONE

MINES AND PROSPECTS

Location: *S½NW¼SW¼ Sec. 21, NE¼SE¼SW¼ Sec. 28, and N½NW¼SE¼ Sec. 29, T.18S., R.13E., MDBM, Fresno Co. (1)

Description: roofing granule quarries

Geology: various shades of green silicified serpentinite crop out as small knobs

Location: *SW¼SE¼SE¼ Sec. 1, T.24S., R.17E., MDBM, Kings Co. (1)

Description: road metal quarry

Geology: hard siliceous McClure shale

CLAYS

MINES AND PROSPECTS

Name: McKittrick Mud Co. (*Midway*)

Location: *NW¼NW¼SW¼ Sec. 13 and NE¼SE¼ Sec. 14, T.30S., R.21E., MDBM, Kern Co. (1,16)

Description: about 6,000 tons mined annually from pit 1800′ long, 250′ wide and 40′ deep; used for oil well drilling mud

Geology: mudstone about 26′ thick in a small depression along an E-trending fault; overlain by 1′ of soil; some gypsum also present

COAL AND LIGNITE

MINES AND PROSPECTS

Name: California

Location: *W½SW¼SE¼NE¼ Sec. 22, T.20S., R.14E., MDBM, Fresno Co. (1,2,21)

Description: active 1880–96 and 1940; in 1892 reported monthly production of 300 tons; 400′ incline, and two adits, one 1370′ long; moisture 11.25%, volatiles 48.50%, fixed carbon 31.40%, and ash 8.35% reported

Geology: lignite seams to 2′ thick in a gray silty clay zone striking N10°W, dipping 53°E about 20–25′ below top of Domengine sandstone

Name: San Joaquin Valley

Location: *W½NW¼SW¼NW¼ Sec. 26, T.20S., R.14E., MDBM, Fresno Co. (1,2,21)

Description: active 1880–96; in 1890 reported daily production was 15 tons; three adits 300′, 400′, and 1700′ long and a 300′ incline to depth of 200′; coal mined in 30′ rooms leaving pillars 25′ thick

Geology: main bed averages 4′ thick, strikes N20°W and dips 30°E with 5′ thick hanging wall of black bituminous clay and 6′ thick footwall of sandstone; several thinner beds; four 4–6″ seams of brown lignite exposed in clay zone 25′ thick that strikes N20°W for 50′ and dips 52°E; beds about 25′ below top of Domengine sandstone

OCCURRENCES

Location: NE¼NE¼ Sec. 27, T.20S., R.14E., MDBM, Fresno Co. (1)

Geology: lignite-bearing zone in Domengine sandstone crops out for about ¼ mile in a N20–30°W direction

Conclusions: shows little promise as fuel

DECORATIVE AND DIMENSION STONE

MINES AND PROSPECTS

Name: Porterville Black Granite

Location: *NW¼NW¼NW¼ Sec. 29, T.21S., R.29E., MDBM, Tulare Co. (1,9)

Description: production since 1915 valued at $200,000 from quarry 150′ long, 75′ wide, and 100′ deep; "Porterville Black" stone used as facing on buildings and as monumental stone

Geology: dark gray gabbro-diorite

OCCURRENCES

Location: NE¼ Sec. 29, T.21S., R.29E., MDBM, Tulare Co. (1)

Geology: dark gray gabbro-diorite and hornblende-biotite tonalite

Conclusions: shows limited promise (productive quarries in same rock nearby)

GYPSUM AND GYPSITE [$CaSO_4 \cdot 2H_2O$]

MINES AND PROSPECTS

Location: *E½NE¼SE¼NE¼ Sec. 22, T.20S., R.14E., MDBM, Fresno Co. (1)

Description: worked around 1900 for agricultural gypsum

Geology: gypsite overlying a thin sandstone bed in Jacalitos formation

Name: Eureka

Location: *NW¼SE¼NW¼ Sec. 26, T.20S., R.14E., MDBM, Fresno Co. (1)

Description: operated 1896; used as agricultural soil conditioner

Geology: gypsum bed in NE-dipping Jacalitos formation

Name: Coalinga

Location: *SW¼ Sec. 35, T.20S., R.14E., and NE¼ Sec. 2, T.21S., R.14E., MDBM, Fresno Co. (1,19)

Description: production 1957–58 supplied 50 ton-per-hr. mill; used as agricultural soil additive

Geology: local lenses of gypsite 6–24″ thick overlain by 6–24″ of overburden; in Jacalitos formation

Location: *SE¼NE¼NW¼ Sec. 13, T.24S., R.17E., MDBM, Kings Co. (1,10)

Description: active 1913; quarry

Geology: gypsite and fuller's earth in alluvium

Name: Purity

Location: *SE¼SE¼SE¼ Sec. 24, T.28S., R.28E., MDBM, Kern Co. (1,16)

Description: crystalline gypsum and gypsite mined from pits 1953 for agricultural use; +54% gypsum reported

Geology: 2′ average thickness of gypsite underlain by crystalline gypsum lenses in siltstone; 2′ of overburden

Location: E½ and E½W½ Sec. 25, T.28S., R.28E., MDBM, Kern Co. (1)

Description: several shallow pits in NE¼; 200 acres estimated underlain by gypsite in E½ and E½W½; 400,000 tons of gypsite estimated assuming 1′ thickness

Geology: gypsite in siltstone with 1–3′ of overburden

Conclusions: warrants further investigation for local use

Name: Cottonwood Creek

Location: *S½ Sec. 21, N½ Sec. 27, and NE¼ Sec. 28, T.29S., R.30E., MDBM, Kern Co. (1,18)

Description: mined as soil conditioner

Geology: gypsum surface crusts and beds twenty inches to five feet thick interstratified with soft earthy shales

Name: McKittrick

Location: *S½S½ Sec. 30, T.30S., R.22E., MDBM, Kern Co. (19)

Description: worked prior to 1910; quarried 1949 from trench 500′ long by 50′ wide by 10–15′ deep; +85% gypsum reported

Geology: crusty gypsite lenses with $CaCO_3$ below 10′ of alluvium over an area of several dozen acres; gypsite grades downward into gravel containing selenite

Location: *NW¼NE¼ and E½SE¼ Sec. 31, T.30S., R.22E., MDBM, Kern Co. (1,19)

Description: shallow pits

Geology: 3′ of hard compact gypsite under a few inches of stony soil and over 6′ of gravel

Location: $SE\frac{1}{4}SW\frac{1}{4}$ Sec. 32, T.30S., R.22E., MDBM, Kern Co. (1,19)

Description: trenches, pits; production unknown; idle 1955; selected sample analysed 60.6% gypsum, 16.47% SiO_2, and 7.85% $Fe_2O_3 + Al_2O_3$

Geology: 5′ of sand and gravel overlie 3′ of soft gray gypsite which grades downward into gray gypsiferous sand and clay

Conclusions: warrants further investigation

Name: Derby Acres

Location: *Secs. 4 and 9, T.31S., R.22E., MDBM, Kern Co. (16)

Description: 100 tons gypsite reported stockpiled in 1954

Geology: 1–2′ gypsite bed underlain by McKittrick formation

Location: $W\frac{1}{2}SW\frac{1}{4}$ Sec. 5, T.31S., R.22E., MDBM, Kern Co. (1,19)

Description: pits and trenches; worked prior to 1948; selected sample analysed 65.05% gypsum, 15.05% SiO_2 and 4.70% $Fe_2O_3 + Al_2O_3$

Geology: channel deposits of gypsite in alluvium and siliceous shale

Conclusions: shows limited promise

Location: $N\frac{1}{2}N\frac{1}{2}NE\frac{1}{4}$ Sec. 5, T.31S., R.22E., MDBM, Kern Co. (1,19)

Description: shallow pits and trenches; worked prior to 1948

Geology: channel deposits of gypsite in alluvium and siliceous shale

Conclusions: shows limited promise

Name: McKittrick

Location: *$E\frac{1}{2}NW\frac{1}{4}$ Sec. 5, T.31S., R.22E., MDBM, Kern Co. (1,19)

Description: shallow pits and trenches, worked prior to 1948

Geology: channel deposits of gypsite in alluvium and siliceous shale

Location: *$S\frac{1}{2}SE\frac{1}{4}$ and $SE\frac{1}{4}SW\frac{1}{4}$ Sec. 5, T.31S., R.22E., MDBM, Kern Co. (19)

Description: pits to 20′ deep and trenches worked prior to 1952

Geology: channel deposits of gypsite in dry washes

Location: $NW\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$ Sec. 8, T.31S., R.22E., MDBM, Kern Co. (1,19)

Description: several pits and trenches worked prior to 1952; selected sample analysed 72.80% gypsum, 9.95% SiO_2, and 2.65% $Fe_2O_3 + Al_2O_3$

Geology: channel deposit of gypsite at least 5′ thick in shale and sandstone overlying sand and gravel

Conclusions: shows limited promise

Name: Green and Collins

Location: *$SE\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ and $NE\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}$ Sec. 8, T.31S., R.22E., MDBM, Kern Co. (1,19)

Description: pits and trenches worked prior to 1952; selected sample analysed 72.80% gypsum, 9.95% SiO_2, and 2.65% Fe_2O_3 + Al_2O_3

Geology: channel deposit of gypsite at least 5′ thick in shale and sandstone overlying sand and gravel

OCCURRENCES

Location: NE¼SW¼ Sec. 21, T.30S., R.22E., MDBM, Kern Co. (1,16,19)

Geology: 3′ thick fairly compact gypsite bed (+85% gypsum) underlain by sand

Conclusions: shows little promise

MAGNESITE [$MgCO_3$]

MINES AND PROSPECTS

Location: SE¼NW¼ Sec. 33, T.19S., R.27E., MDBM, Tulare Co. (1)

Description: small pit

Geology: magnesite vein 6–36″ wide

Conclusions: shows little promise

Location: E½SE¼ Sec. 25, T.21S., R.28E., MDBM, Tulare Co. (1,4,17)

Description: three adits and four pits

Geology: numerous steeply dipping magnesite veins to 4′ wide in serpentinite

Conclusions: shows limited promise

Location: *SW¼ Sec. 30, T.21S., R.29E., MDBM, Tulare Co. (1,4,17)

Description: magnesite reported mined 1916–17 from pits and adits

Geology: numerous steeply dipping magnesite veins to 4′ wide in serpentinite

Name: Porterville (*Sierra*)

Location: *E½ Sec. 31, T.21S., R.29E., MDBM, Tulare Co. (4,9)

Description: (see Rex, Lindsay, and Tulare below) total production reportedly exceeded 500,000 tons

Geology: fracture fillings and stockworks containing supergene magnesite in weathered serpentinite

Name: Tulare

Location: *N½NE¼ Sec. 31, T.21S., R.29E., MDBM, Tulare Co. (4)

Description: extensive workings; daily production 1916–17 of 80 tons; selected samples analysed 88–97% MgO and to 7.49% CaO; magnesite reported to constitute 30% of quarried material

Geology: magnesite veins 6–24″ wide strike N80°E and N75°W, dip to 80° in serpentinite; nodular magnesite in stockworks reported to 38′ wide; MgO ran 88.0–97.0%, CaO 0.00–7.49%

Sand and gravel pit operated by Kern River Rock Company on Southern Pacific's Sec. 35, T.28S., R.28E., MDBM, Kern Co.

Name: Lindsay

Location: *N½SE¼ and S½NE¼ Sec. 31, T.21S., R.29E., MDBM, Tulare Co. (4)

Description: more than 33,300 tons produced prior to 1925; active 1916–17; cuts, adits with winzes to depth of 385′

Geology: magnesite veins to 4′ wide strike N-NW and dip 75°E in serpentinized peridotite

Name: Rex

Location: *S½SE¼ Sec. 31, T.21S., R.29E., MDBM, Tulare Co. (4)

Description: mined 1916–17 from cuts and adits

Geology: numerous veins to 18″ wide strike N20°E to E-W and dip 85°E to 65°S in serpentinite

Name: Nevins

Location: *Sec. 29, T.23S., R.15E., MDBM, Monterey Co. (12)

Description: cuts; 95.96% $MgCO_3$, 1.12% SiO_2, 0.14% Al_2O_3 and 0.11% Fe_2O_3 reported

Geology: magnesite in serpentinite

Name: White Horse

Location: *NW¼NW¼NW¼ Sec. 28, T.23S., R.16E., MDBM, Kings Co. (1)

Description: trenches

Geology: magnesite in 20′ by 30′ zone in altered and sheared serpentinite landslide block

OCCURRENCES

Location: S½ Sec. 21 and SW¼ Sec. 27, T.23S., R.16E., MDBM, Kings Co. (1)

Geology: magnesite float in serpentinite landslide debris

Conclusions: shows little promise

Location: NE¼NE¼ Sec. 29, T.23S., R.16E., MDBM, Kings Co. (1)

Geology: magnesite float and outcrops in serpentinite

Conclusions: shows little promise

Location: *SW¼NW¼SW¼ Sec. 28, T.24S., R.16E., MDBM, Monterey Co. (1)

Geology: small, irregular, botryoidal masses of hard white magnesite crop out over an area 6′ by 30′ within altered Franciscan sandstone associated with serpentinite

SAND AND GRAVEL

MINES AND PROSPECTS

Location: *N½NW¼ Sec. 2, T.18S., R.14E., MDBM, Fresno Co. (1)

Description: pit; used for road construction

Geology: Recent stream gravels along Cantua Creek

Location: $SW\frac{1}{4}NW\frac{1}{4}NE\frac{1}{4}$ Sec. 5, T.23S., R.19E., MDBM, Kings Co. (1)

Description: small quarry; used for local roads

Geology: sand and gravel in alluvial fan

Conclusions: shows little promise

Location: *$SW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$ and $SW\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}$ Sec. 2, T.27S., R.22E., MDBM, Kern Co. (1)

Description: two borrow pits

Geology: fine to medium sand deposits to 15′ thick in alluvial plain

Name: Rinker (*Cal Rock*)

Location: *$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 26, T.28S., R.27E., MDBM, Kern Co. (9)

Description: pit; used for concrete aggregate and road base

Geology: Plio-Pleistocene Kern River series; cobble-boulder conglomerate layer 10–15′ thick; maximum size gravel 8–12″ in sand matrix; 1–2′ sand overburden

Name: Kern River

Location: *$SW\frac{1}{4}NE\frac{1}{4}$ Sec. 27, T.28S., R.27E., MDBM, Kern Co. (9)

Description: pits; used for concrete aggregate

Geology: Plio-Pleistocene Kern River series; cobble conglomerate layer 10–15′ thick; cobbles to 8″ in sand matrix; 1–2′ sand overburden

Name: Dicco

Location: *$W\frac{1}{2}$ Sec. 27 and $E\frac{1}{2}$ Sec. 28, T.28S., R.27E., MDBM, Kern Co. (9)

Description: pits; used as bituminous aggregate

Geology: mostly Plio-Pleistocene Kern River series; cobble-boulder conglomerate 6–8′ thick with sand lenses 1–3′ thick; boulders to 12″; 1–2′ of sand overburden

Location: $NW\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}SE\frac{1}{4}NE\frac{1}{4}$, $NW\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ and $N\frac{1}{2}NE\frac{1}{4}SE\frac{1}{4}$ Sec. 35, T.28S., R.28E., MDBM, Kern Co. (see photo, page 26) (1,8)

Description: estimated 500 ton-per-day plant; deposit contains an estimated 2,000,000 cu. yds.; used for concrete and bituminous aggregate

Geology: Plio-Pleistocene Kern River series and Quaternary terrace and flood-plain deposits; highly lenticular, cobble-boulder lenses to 6′ thick, sand beds 6–12′ thick; 6′ of overburden; water 30′ below surface; deposit averages 65% sand, 35% gravel

Conclusions: large source of sand and gravel

Name: Elsey Pit

Location: *$NW\frac{1}{4}$ Sec. 30, T.29S., R.23E., MDBM, Kern Co. (16)

Description: pit; used in highway construction

Geology: sand deposit in Recent valley alluvium

Location: *$SE\frac{1}{4}$ Sec. 28, T.29S., R.27E., MDBM, Kern Co. (9)

Description: quarry; used for road-base material

Geology: Plio-Pleistocene Kern River series; very sandy

Name: Griffith

Location: *SE¼NW¼ Sec. 9, T.29S., R.28E., MDBM, Kern Co. (9,16)

Description: pit 200′ long, 75′ wide, 25′ deep; used for concrete aggregate, bituminous aggregate and fill

Geology: Quaternary Kern River deposits; 8–10′ overburden; pebble-cobble gravel lenses to 3′ thick interbedded with sand lenses to 8′ thick

Name: Cottonwood Creek

Location: *Sec. 12, T.29S., R.29E., MDBM, Kern Co. (1,9)

Description: entire area along Cottonwood Creek has been worked; used for concrete

Geology: Quaternary terrace deposits derived from reworkings of unconsolidated silt to boulders of the Plio-Pleistocene Kern River series

Location: E½SW¼SE¼, W½SE¼SE¼ and SE¼SE¼SE¼ Sec. 13, T.29S., R.29E., MDBM, Kern Co. (1,5,9)

Description: quarry in SW¼SE¼SE¼

Geology: Quaternary unconsolidated silt to boulders; reworked Plio-Pleistocene Kern River series

Conclusions: good source of aggregate

Location: NW¼NE¼NE¼ Sec. 13, T.29S., R.29E., MDBM, Kern Co. (1)

Description: quarry

Geology: Quaternary terrace gravels and, locally, Miocene Round Mountain gravel

Conclusions: good source of aggregate

Name: Cottonwood Creek

Location: *W½NE¼ and SW¼SE¼ Sec. 13, T.29S., R.29E., MDBM, Kern Co. (1,5,9)

Description: worked along Cottonwood Creek

Geology: Quaternary terrace deposits of unconsolidated silt to boulders derived from reworked Plio-Pleistocene Kern River series

Location: N½N½SW¼ Sec. 19, T.29S., R.30E., MDBM, Kern Co. (1,9)

Description: active 1958; pit about 300′ wide by 1500′ long and 10–12′ deep; maximum volume minable of 300′ wide by 3500′ long, and to 12′ deep would have yielded 400,000–450,000 cu. yds.

Geology: Quaternary terrace deposits consisting of unconsolidated silt to boulders of reworked Plio-Pleistocene Kern River series

Conclusions: good source of aggregate

Name: Standard Oil Pit

Location: *SE¼ Sec. 5, T.30S., R.22E., MDBM, Kern Co. (16)

Description: pit; source of sand used in highway construction

Geology: sand in Recent valley alluvium

Name: Dougherty Pit

Location: *SW¼ Sec. 9, T.31S., R.28E., MDBM, Kern Co. (16)

Description: pit; used for highway construction

Geology: sand deposit in Recent valley alluvium

Location: *SW¼SW¼ Sec. 19, T.31S., R.29E., MDBM, Kern Co. (1)

Description: pit

Geology: Recent alluvial fan gravel

Location: *NE¼SE¼SW¼ Sec. 25, T.11N., R.20W., SBBM, Kern Co. (1)

Description: quarry

Geology: Tertiary-Quaternary deposits of sand and gravel

OCCURRENCES

Location: E½ Sec. 1, T.18S., R.14E., MDBM, Fresno Co. (1)

Geology: Recent stream gravels along Salt Creek

Conclusions: source of aggregate

Location: N½NE¼NE¼ Sec. 9, T.20S., R.14E., MDBM, Fresno Co. (1)

Geology: Quaternary terrace deposits along Los Gatos Creek; 10–75′ thickness of poorly-sorted silty sand to coarse gravel; contains much interstitial clay

Conclusions: possible source of aggregate

Location: S½SE¼ and W½SE¼SW¼ Sec. 25, T.28S., R.28E., MDBM, Kern Co. (1)

Geology: Pleistocene-Recent terrace deposit of sand and gravel, at least 15′ thick overlain by a few feet of sandy clay soil

Conclusions: source of aggregate

Location: N½, N½NW¼SE¼, SE¼NW¼SE¼ and NE¼SE¼ Sec. 9, T.29S., R.29E., MDBM, Kern Co. (1)

Geology: Plio-Pleistocene Kern River series gravel

Conclusions: good source of aggregate

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Geologic History

Editor's Note:

Because of the diversity and complexity of the geology of Southern California, it was deemed impractical to attempt to summarize the geologic history from Southern Pacific's reports and published literature within the time and print available. Portions of seven geomorphic provinces were covered by Southern Pacific's geologic survey in Southern California: Mojave Desert, Colorado Desert, Transverse Ranges, Peninsular Ranges, Coast Ranges, Great Valley, and Southern Sierra Nevada. A prolific amount of published literature describes the geology of these provinces, and those publications considered to be most pertinent to the areas covered by the survey in PART I are listed in the following Selected Bibliography.

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PART II

Western Mojave Desert

By: W. H. Spurck, *Research Geologist*

PART II encompasses areas mapped by Southern Pacific within:
Townships 29–32 South, Ranges 34–47 East, MDBM.
Townships 3–12 North, Ranges 1–16 West, SBBM.
See Mineral Commodity Map II in map pocket.
See page 90 for *References*.

Metallics

The introductory paragraphs relating to deposits[1] of metallic mineral commodities in PART I (see page 11) are also pertinent here.

Of the metallic deposits on Southern Pacific lands listed in the PART II area, the following is considered most promising:

SILVER:
$E\frac{1}{2}E\frac{1}{2}SE\frac{1}{4}$ Sec. 1, T.10N., R.3W., SBBM, San Bernardino Co.

COPPER [Cu]

MINES AND PROSPECTS

Name: Smith (*Iron Hat, Schmidt B. Copper*)
Location: *$S\frac{1}{2}SE\frac{1}{4}NE\frac{1}{4}$ Sec. 1, T.29S., R.38E., MDBM, Kern Co. (6,16,26)
Description: 75′ incline, 40°E; 500′ incline, and several adits
Geology: minor native copper with pyrite and chalcopyrite in N-trending, E-dipping quartz stringers in iron-stained schist; lead mineralization in NW-trending veins

Name: Zuna A and B (*Copperola*)
Location: *$NW\frac{1}{4}$ Sec. 12, T.29S., R.38E., MDBM, Kern Co. (6,16,26)
Description: 30 tons shipped 1941; 165′ incline 40°NW, 100′ trench 50′ deep
Geology: azurite, malachite, and chalcopyrite with minor gold and silver in parallel quartz veins in 6–15′ wide shear zone in monzonite strike NW, dip 45–80°E

Name: Copperola (*Zuna*)
Location: *$NW\frac{1}{4}$ Sec. 13 and $NW\frac{1}{4}NE\frac{1}{4}$ Sec. 24, T.29S., R.38E., MDBM, Kern Co. (6,16,26)

[1] Deposits at locations indicated by * are not owned by Southern Pacific.

Description: 21 lode claims; 50′ shaft

Geology: several parallel quartz veins six inches to three feet wide in quartz diorite strike N40°W, dip 60°SW; copper occurs as disseminated chalcopyrite and as fracture coatings of azurite and malachite

Name: Copper Basin Group (*Lees Claims*)

Location: *W½SW¼ Sec. 14 and SW¼SE¼ Sec. 15, T.29S., R.38E., MDBM, Kern Co. (6,16,26)

Description: 600′ adit, 1872′ tunnel, and numerous pits; four lode claims

Geology: series of parallel 4–6″ quartz stringers strike NW and dip 45–70°E in granite

Name: Orphan Anne

Location: *N½N½ Sec. 15, T.29S., R.38E., MDBM, Kern Co. (16)

Description: 50′ shaft, numerous trenches, and pits

Geology: chalcopyrite in 6–18″ quartz vein several hundred feet long that strikes N50°W, dips 40–60°E in foliated quartz diorite

Name: Mojave

Location: *Secs. 20 and 21, T.29S., R.38E., MDBM, Kern Co.
(See under METALLICS, Gold)

Name: Green Dragon

Location: *NE¼NW¼ Sec. 26, T.29S., R.38E., MDBM, Kern Co. (16)

Description: eight lode claims; several pits and trenches

Geology: minor chalcopyrite in quartz vein in 4–12″ shear zone that strikes N15°W and dips 65°SW in quartz diorite

Name: Copper Queen

Location: *NE¼SE¼SW¼ Sec. 27, T.29S., R.38E., MDBM, Kern Co. (6,16)

Description: 250′ shaft, short NNW-trending adit and 100′ adit on vein; one carload reported shipped 1921

Geology: weak copper and gold mineralization and minor chalcopyrite along west wall of a N-trending mafic dike and along NNW-trending 6″ quartz stringer in granitic rocks

Name: Golden View

Location: *SE¼NE¼NW¼ Sec. 4, T.29S., R.39E., MDBM, Kern Co. (6,16)

Description: 18 lode claims; many pits and short adits

Geology: numerous copper-bearing quartz stringers trend NW in metasedimentary rocks

Name: Golden Eaglet and Queen

Location: *E½ Sec. 5, T.29S., R.39E., MDBM, Kern Co. (6,16)

Description: 15 claims; shallow pits

Geology: copper-stained quartz stringers in greenstone

Name: Colorado Camp Group (*French, Layman, Walsh, McClaude*)

Location: *$NW\frac{1}{4}NW\frac{1}{4}$ Sec. 5 and $NE\frac{1}{4}NE\frac{1}{4}$ Sec. 6, T.29S., R.39E., MDBM, Kern Co. (6,9,16,17,20)

Description: several shafts to 200′ deep and several adits to veins; active in 1958

Geology: copper-bearing shear zones and quartz stringers in schist and argillite; Copper King vein 2–3′ wide strikes N, dips 55°E in shear zone; 6% Cu reported in NW-striking stringers 2–8″ wide; copper minerals are chalcopyrite and copper oxides

Name: Copper Chief (*Gold Badger, Zundra Group*)

Location: *$W\frac{1}{2}NW\frac{1}{4}SW\frac{1}{4}$ Sec. 7, T.29S., R.39E., MDBM, Kern Co. (6,16,21)

Description: short cut and 750′ adit to vein; seven tons reported shipped

Geology: lens 6′ long containing bornite and chalcopyrite in quartz vein that strikes N40°W, dips 65°SW in monzonite, marble, and mica schist

Name: Galena (*Decker*) Group

Location: *$W\frac{1}{2}W\frac{1}{2}SE\frac{1}{4}$ Sec. 7, T.29S., R.39E., MDBM, Kern Co. (6,16)

Description: five lode claims; pit

Geology: copper-bearing quartz stringers in greenstone

Name: Gold Peak

Location: *$NE\frac{1}{4}$ Sec. 7, T.29S., R.39E., MDBM, Kern Co. (6,16)

Description: five lode claims; shallow pits and adits

Geology: NW-trending copper-stained quartz stringers in metasedimentary rocks

Name: Austin Group (*Voss*)

Location: *$S\frac{1}{2}$ Sec. 9 and $E\frac{1}{2}$ Sec. 16, T.29S., R.39E., MDBM, Kern Co. (6,16)

Description: adit several hundred feet long (in Sec. 16), two adits (in Sec. 9), and several shafts

Geology: copper minerals associated with minor gold, lead, manganese, and tungsten minerals in shear zones that strike NW, dip 30–50°NE in metamorphic rocks

Name: College Girl (*Confidence*) Group

Location: *$E\frac{1}{2}E\frac{1}{2}NE\frac{1}{4}$ Sec. 18, T.29S., R.39E., MDBM, Kern Co. (6,16)

Description: numerous shafts, adits, shallow cuts may be part of Gateway Group (see under METALLICS, Gold)

Geology: copper-sulfides, gold, galena, and sphalerite in NW-trending, NE-dipping shear zones in metamorphic and granitic rocks; mineralization sparse in 200′ wide belt parallel to bedding planes of metamorphic rocks

Name: Orange Blossom

Location: *$NW\frac{1}{4}$ Sec. 6, T.30S., R.38E., MDBM, Kern Co. (6,16,26)

Description: 85′ shaft, 75′ adit, and pits

Geology: azurite, bornite, malachite, and minor gold in gossan outcrop 10–15′ wide that strikes N20°W, dips 60°SW; quartz vein 2′ wide strikes N25°W, dips 70°SW in diorite and schist

Location: *E½ Sec. 12, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Description: shallow shafts, adits and pits

Geology: copper-stained NE and NW-trending quartz veins with minor chalcopyrite in hornblende diorite adjacent to a NNE-trending fault

Name: Slocum Camp

Location: *S½SW¼SE¼ Sec. 5 and N½NE¼ Sec. 8, T.31S., R.45E., MDBM, San Bernardino Co. (1)

Description: 200′ shaft, several shallow pits

Geology: chalcopyrite-bearing quartz veins and pegmatite dikes in quartz monzonite; locally heavily copper-stained

Location: *SW¼SE¼(?) Sec. 28, T.31S., R.46E., MDBM, San Bernardino Co. (1)

Description: 60′ shaft

Geology: quartz vein in quartz monozonite(?) carrying chalcopyrite, malachite, and chrysocolla; some silver also reported

Location: SW¼SW¼SW¼ Sec. 3, T.32S., R.47E., MDBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Trade Rat

Location: *W½NE¼NE¼ Sec. 16, T.32S., R.47E., MDBM, San Bernardino Co. (31)

Description: two 60′ shafts

Geology: zone of pyrite with chalcopyrite in shattered diorite

Name: Azurite (*Blue Bonnet*)

Location: *S½S½SW¼ Sec. 22, T.32S., R.47E., MDBM, San Bernardino Co. (31)

Description: 80′ incline and pits

Geology: copper-stained 1200′ long aplite dike strikes WNW along shear zone in diorite

Location: SE¼SE¼ Sec. 25, T.7N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *SE¼SE¼SW¼ Sec. 12, T.8N., R.7W., SBBM, San Bernardino Co. (1)

Description: shallow pit

Geology: minor copper-carbonates along fracture surfaces in a NW-trending quartz vein in quartz monzonite

Name: Pedry (*Golden Witch, San Antonio*)

Location: *W½SW¼ and SW¼NW¼ Sec. 6 and W½ Sec. 7, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Name: Hoosier and Missouri(?)

Location: *S½S½NW¼ Sec. 18, T.10N., R.2W., SBBM, San Bernardino Co. (5,9,21,31)

Description: 90′ shaft, 300′ drift

Geology: copper, gold, silver and lead minerals with minor barite reported in quartz vein to 15′ wide along contact between rhyodacite and granodiorite

Name: Wegman Group (*Eureka, Grace Group, Karma*)

Location: *NE¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Silver)

Name: Cactus Queen (*Blue Eagle, Cactus, Silver Prince, Winkler*)

Location: *SW¼NW¼ Sec. 17, T.10N., R.13W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: B and B (*Old Jackass*)

Location: *NE¼SE¼NE¼ Sec. 8, T.11N., R.1W., SBBM, San Bernardino Co. (9,31)

Description: 70′ incline, shallow shafts, and pits; active 1952; 5–6% Cu, 14–15 oz. Ag, and 0.4 oz. Au reported

Geology: copper-carbonates, chrysocolla, cuprite, argentite, and traces of cinnabar in quartz veins to 2′ wide strike E-W, dip vertically in quartz monzonite

Name: Pride of Mojave (*Four Star*)

Location: *NW¼ Sec. 33, T.11N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

OCCURRENCES

Name: Crystal Springs

Location: *N½NW¼NE¼ Sec. 22, T.29S., R.38E., MDBM, Kern Co. (6,16)

Geology: copper-bearing quartz veins in quartz diorite

TRENDS

Location: W½NW¼ Sec. 9, T.11N., R.1W., SBBM, San Bernardino Co. (1)

Geology: possible extensions of copper-gold-silver-bearing vein from B and B deposit in NE¼ Sec. 8, T.11N., R.1W.

GOLD [Au]

MINES AND PROSPECTS

Name: Bryan

Location: *N½ and SW¼ Sec. 19(?), T.29S., R.34E., MDBM, Kern Co. (16,23,26)

Description: mined prior to 1900; 600′ adit to vein, 300′ adit, and 400′ adit, two raises

Geology: 1–4′ wide vein strikes NW, dips 10–15°SW, in fractured granitic rock

Location: NE¼SE¼ Sec. 19, T.29S., R.34E., MDBM, Kern Co. (1)

Description: adit to vein; 0.02–0.4 oz. Au reported; caved 1958

Geology: two 1–3′ wide quartz veins strike N65–70°E and dip vertically to 70°N in granodiorite

Conclusions: shows little promise

Name: Sunshine Claim (*Old "Chilson"*)
Location: *NW¼SW¼NE¼ Sec. 19, T.29S., R.34E., MDBM, Kern Co. (1)
Description: 30′ shaft, 50′ adit; some low-grade ore reported
Geology: granitic rock

Name: Garanger
Location: *N½SE¼SE¼ Sec. 29, T.29S., R.34E., MDBM, Kern Co. (1)
Description: pits
Geology: quartz veins in quartz diorite

Name: Smith (*Iron Hat, Schmidt B. Copper*)
Location: *S½SE¼NE¼ Sec. 1, T.29S., R.38E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Golden Badger
Location: *Sec. 12, T.29S., R.38E., MDBM, Kern Co. (6,16)
Description: about $4,000 in Au produced 1940–41
Geology: granitic country rock

Name: Mojave
Location: *Secs. 20 and 21, T.29S., R.38E., MDBM, Kern Co. (16)
Description: pits
Geology: copper, gold, and silver in quartz veins in metamorphic rocks

Name: Rattlesnake Group
Location: *Sec. 32(?), T.29S., R.38E., MDBM, Kern Co. (6,16,26)
Description: shallow shafts and pits
Geology: gold and silver with cerrusite, galena, and copper oxides in parallel quartz veins 1–2′ wide that strike NW and dip 40–60° in granite

Name: Austin Group (*Voss*)
Location: *S½ Sec. 9 and E½ Sec. 16, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Gateway (*Lutz*)
Location: *NE¼NW¼SE¼ Sec. 17, T.29S., R.39E., MDBM, Kern Co. (6,16)
Description: five lode claims
Geology: NW-trending shear zones with quartz stringers parallel to bedding planes in metasedimentary rocks

Name: College Girl (*Confidence*) Group
Location: *E½E½NE¼ Sec. 18, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Judy Ann
Location: *SE¼SE¼ Sec. 6, T.29S., R.40E., MDBM, Kern Co. (16)

Description: 10′ adit and 20′ trench

Geology: brecciated quartz lens 10′ wide, 30′ long, and 20′ deep in NW-trending shear zone in diorite

Name: Operator Divide (*Operator, Phoenix, Valverdo*)

Location: *W½SE¼ Sec. 25, T.29S., R.40E., MDBM, Kern Co. (11,16,20,23,26)

Description: $600,000 produced 1896–1925; 0.8 oz. Au reported tenor; mined to 200′ depth via incline leading to 2000′ of drifts; several other shafts reported

Geology: lenses and shoots containing gold in quartz stringers and veins in five oxidized shear zones 2–3′ wide that strike N45°W and dip 20°NE in schist

Name: Pinmore (*Croesus Penimore*)

Location: *SE¼ Sec. 25, T.29S., R.40E., MDBM, Kern Co. (3,11,16,23,26)

Description: a few thousand oz. of Au produced 1897–1938 from two inclines to 300′ and over 2500′ workings on several levels; 0.5–1.0 oz. Au reported

Geology: iron-stained quartzose shear zones strike N25°E and dip 25°E in schist

Name: Windy

Location: *SW¼SW¼SW¼ Sec. 25, T.29S., R.40E., MDBM, Kern Co. (3,16,20,23,26)

Description: a few thousand oz. Au mined in 1899, 1911–15, 1926–28, and 1931–37 from 225′ incline with several thousand feet of drifts on four levels to 200′

Geology: quartz stringers and iron-stained brecciated schist along steep NE-dipping shear zones in schist

Name: Snowbird

Location: *NE¼ Sec. 26, T.29S., R.40E., MDBM, Kern Co. (16)

Description: four inclines, a shaft and an adit

Geology: two gold-bearing fault zones strike N25–30°W and dip 60°N in schist

Name: Little Butte

Location: *SE¼NE¼ Sec. 35, T.29S., R.40E., MDBM, Kern Co. (3,9,11,16,23,26)

Description: $150,000–400,000 in 0.3–12.0 oz. Au reportedly mined 1897–1902 and 1905–06 from incline (60°NE) with 3500′ of drifts on levels at 50′ intervals

Geology: gold in quartz stringers in two siliceous zones that strike N40–70°W and dip 50–60°NE along faults and diorite dikes in schist

Name: Consolidated (*Good Hope, Kenyon*)

Location: *NE¼SE¼ Sec. 35, T.29S., R.40E., MDBM, Kern Co. (3,9,16,22,23,26)

Description: $50,000 in gold reportedly produced 1897–1901, 1913–17, 1934–40 from two 500′ inclines with drifts at 50′ intervals

Geology: two 20′′ wide silicified zones in schist; Butte "vein" strikes N70°W, dips 45°NE along a diorite dike; Hope "vein" strikes, N40°W, dips 50°NE; zones consist of brecciated, iron-stained, and silicified schist carrying gold and a little scheelite

Name: Glorietta and Discorded claims

Location: *SE¼ Sec. 35, T.29S., R.40E., MDBM, Kern Co. (16,23)

Description: two shafts 100′ deep

Geology: shear zones in quartz monzonite and schist

Name: Golden Rule Claim

Location: *Sec. 36, T.29S., R.40E., MDBM, Kern Co. (16)

Description: 100′ incline, 250′ adit, and 300′ of drifts

Geology: quartz vein in schist

Name: King Solomon (*Ashford*)

Location: *NE¼SW¼ Sec. 36, T.29S., R.40E., MDBM, Kern Co. (3,9,11,16,17,23,26)

Description: active 1896 to late 1940's; produced more than $500,000 in gold, largely 1919–42 from 580′ incline, three shafts and about 11,000′ of horizontal workings at 200′, 300′, 350′, 450′ and 550′ levels

Geology: twelve 1′ wide gold-bearing quartz veins in two vein systems within brecciated quartz monzonite and schist; most productive vein system strikes N60–80°W, dips 40–50°SW to NE; other vein system strikes N35°W, dips 40–50°NE

Name: Butte (*Big Butte, Butte Lode, Butte Wedge*)

Location: *NW¼SW¼ Sec. 36, T.29S., R.40E., MDBM, Kern Co. (9,11,16,23,26)

Description: active 1896–1912, 1916–21, and 1925–42; most of nearly $2,000,000 in gold and silver produced 1896–1912; mined to 500′ depth from shafts leading to 24,000′ of workings on nine levels; average tenor of 0.75 oz. Au reported

Geology: gold and pyrite with scheelite in Butte vein that strikes N50°W for 2000′ and dips 45°N along fault zone in schist

Name: Croesus Group (*Little Charlie*)

Location: *Sec. 6, T.30S., R.38E., MDBM, Kern Co. (6,16,26)

Description: 200′ adit

Geology: auriferous quartz vein 6–24″ wide strikes N40°W, dips 25°S in metamorphic rocks

Name: Orange Blossom

Location: *NW¼ Sec. 6, T.30S., R.38E., MDBM, Kern Co.
(See under METALLICS, Copper)

Location: *N½N½ Sec. 29, T.31S., R.46E., MDBM, San Bernardino Co. (1)

Description: pits and shafts

Geology: quartz veins strike W and NE in hornblende diorite

Location: N½NW¼NE¼ Sec. 33, T.31S., R.46E., MDBM, San Bernardino Co. (1)

Description: shallow pits and short adits; selected sample assayed a trace to 0.07 oz. Au and 0.10–0.20 oz. Ag

Geology: minor chalcopyrite in irregular quartz veins 1–3′ wide that strike N75°W and dip 70°N in quartz monzonite and hornblende diorite

Conclusions: shows little promise

Location: *N½SW¼SE¼ Sec. 28, T.31S., R.47E., MDBM, San Bernardino Co. (1)

Description: 30′ shaft

Geology: chalcopyrite and minor pyrite in 1–2′ quartz vein in diorite

Location: SW¼NE¼ and SE¼ Sec. 33, T.31S., R.47E., MDBM, San Bernardino Co. (1)

Description: shallow pits

Geology: quartz vein strikes NW in granitic rock

Conclusions: shows little promise

Location: NE¼NW¼ Sec. 33, T.31S., R.47E., MDBM, San Bernardino Co. (1)

Description: pits and shallow shafts

Geology: minor malachite and chrysocolla in 1–2′ quartz veins that strike NW and dip SW in diorite

Conclusions: shows little promise

Location: *E½SE¼SW¼ Sec. 8, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: 25′ incline

Geology: shear zone 4′ wide strikes N80°E, dips 70°S in quartz monzonite; minor copper-stained quartz on dump

Location: *NW¼SE¼NW¼ Sec. 4, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Description: pit

Geology: copper staining along N-trending quartz veins in quartz monzonite

Location: NE¼SW¼NE¼, NW¼NE¼SW¼, and SW¼SW¼SW¼ Sec. 11, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Description: pits

Geology: copper-staining along shear zones and NE-trending quartz veins in quartz diorite and quartz monzonite; local small gossans

Conclusions: shows little promise

Location: *NW¼ Sec. 14, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Description: pit

Geology: NE-trending copper-stained quartz vein in quartz diorite

Location: SW¼SW¼SW¼ Sec. 3, T.32S., R.47E., MDBM, San Bernardino Co. (1)

Description: pit; selected sample assayed 0.010 oz. Au, 0.1 oz. Ag and 0.53% Cu

Geology: chalcopyrite in thin quartz vein in diorite; minor scheelite

Conclusions: shows little promise

Location: *SW¼NE¼ Sec. 3, T.32S., R.47E., MDBM, San Bernardino Co. (1)

Description: shallow shaft

Geology: gossan zone along fault contact between quartz monzonite and metamorphic rocks

Location: *S½NE¼ Sec. 8, W½SW¼ Sec. 9, S½ Sec. 16 and SE¼ Sec. 27, T.32S., R.47E., MDBM, San Bernardino Co. (1)

Description: pits and shallow shafts

Geology: copper and iron-stained quartz veins in diorite

Name: Arrastre

Location: *SE¼SW¼SW¼ Sec. 9, T.32S., R.47E., MDBM, San Bernardino Co. (31)

Description: 85′ shaft

Geology: copper-oxide minerals in vein in diorite

Location: *E½SW¼ Sec. 18, T.32S., R.47E., MDBM, San Bernardino Co. (1)

Description: shaft, several pits and extensive underground workings

Geology: NNE-trending copper-stained quartz vein along fault in diorite

Name: Roosevelt

Location: *W½SW¼ Sec. 11, T.6N., R.3W., SBBM, San Bernardino Co. (1,2)

Description: several shafts

Geology: quartz veins in quartz monzonite

Name: Dandy Group

Location: **SE¼*SE¼ Sec. 12, T.6N., R.3W., SBBM, San Bernardino Co. (1,2)

Description: active 1939–40

Geology: gold, chalcopyrite, and pyrite in quartz veins in quartz monzonite and hornblende diorite

Name: Western States (*Gold King, Yankee Maid, Golden State*)

Location: *NE¼NE¼NE¼ Sec. 2, T.6N., R.4W., SBBM, San Bernardino Co. (2,21,31)

Description: active 1910, 1948–49; 80′ incline and cut 100′ long on N vein and incline and cuts on S vein; 350′ crosscut between both veins at depth of 450′

Geology: auriferous pyrite in two veins 4–24″ wide that strike E and dip S in metavolcanic rocks

Location: *NE¼SE¼NE¼ Sec. 12, T.7N., R.1W., SBBM, San Bernardino Co. (1)

Description: pits

Geology: massive white quartz in quartz monzonite

Name: New Deal

Location: *SW¼NE¼NW¼ Sec. 12, T.7N., R.1W., SBBM, San Bernardino Co. (1)

Description: 75′ shaft and two short adits

Geology: S30°E-trending shear zone in metaporphyry

Location: *SE¼NE¼SW¼ Sec. 21, T.7N., R.1W., SBBM, San Bernardino Co. (1)

Description: pits

Geology: NW-trending discontinuous quartz veins in metavolcanic rocks

Location: SE¼SE¼ Sec. 25, T.7N., R.1W., SBBM, San Bernardino Co. (1,9,24,27,28,38)

Description: active early 1930's; several adits on veins to 734′ long connect with main shaft at 275′ level; main shaft had three levels with 820′ drift driven NE into another shaft in Sec. 30, T.7N., R.1E.; selected samples assayed 0.003–0.34 oz. Au, 0.1–0.9 oz. Ag, and to 0.97% Cu

Geology: quartz veins to 3′ wide along NE-trending vertical shear zone in hornblende diorite

Conclusions: shows limited promise

Name: Gold Belt (part)

Location: *NE¼NE¼NE¼ Sec. 36, T.7N., R.1W., SBBM, San Bernardino Co. (1)

Description: 10′ adit to vein

Geology: thin quartz vein trends N18°E in hornblende diorite

Name: Keystone

Location: *E½NE¼SE¼SE¼ Sec. 18, T.7N., R.2W., SBBM, San Bernardino Co. (2,25)

Description: active 1947; $180,000 in 2.4 oz. Au reported mined from nine adits, numerous trenches and pits

Geology: parallel and intersecting 3–12″ gold and silver-bearing, vuggy quartz veins strike N, dip vertically in metavolcanic rocks; reported to contain ferberite

Location: NW¼SW¼NE¼ Sec. 21, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: 30′ incline

Geology: trace of silver reported in 12–15″ vuggy quartz vein in shear zone that strikes N55°W and dips 75°NE in quartz monzonite

Conclusions: shows little promise

Name: Fearnot

Location: *NW¼SE¼SW¼ Sec. 28, T.7N., R.3W., SBBM, San Bernardino Co. (1,2)

Description: several shafts, one inclined; selected sample reportedly assayed 0.49 oz. Au and 6.72 oz. Ag; workings caved

Geology: quartz(?) veins in metavolcanic rocks near contact with quartz monzonite

Name: Lismore

Location: *E½SE¼SE¼ Sec. 28, T.7N., R.3W., SBBM, San Bernardino Co. (2)

Description: incline and several cuts

Geology: E-striking quartz vein dips 50°S in metavolcanic rocks and quartz monzonite

Location: *E½ Sec. 29, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: several shafts, 300–400′ deep

Geology: gold, silver, and pyrite in copper and manganese-stained quartz veins 6–10″ wide that strike N45–80°W and dip 60–70°S in quartz monzonite and metavolcanic rocks

Location: SE¼SE¼ Sec. 33, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: 200′ shaft, two 30′ inclines and numerous pits; selected samples assayed 0.14–0.34 oz. Au and 1.1–3.66 oz. Ag

Geology: pyrite in several vuggy quartz veins to 3′ wide in quartz monzonite; "South" vein strikes N85°E, dips S; "North" vein strikes N85°W; minor manganese and copper-staining; other veins located along N65°W and N70°E shear zones

Conclusions: shows limited promise

Location: N½NW¼NE¼SE¼ Sec. 33, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: 30′ shaft; selected sample assayed 0.015 oz. Au and 0.4 oz. Ag

Geology: pyrite in vuggy quartz vein with epidote and manganese staining along shear zone that strikes N65°W and dips 65°S in quartz monzonite

Conclusions: shows little promise

Location: E½NE¼NW¼ Sec. 33, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: incline (45°S) and several pits; selected samples assayed 0.015–0.6 oz. Au and 0.5–1.20 oz. Ag

Geology: pyrite in quartz veins along shear zones that strike N60–80°E and dip to 57°S in quartz monzonite

Conclusions: shows little promise

Location: *NW¼SW¼SW¼ Sec. 34, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: 100′ incline

Geology: shear zone in metavolcanic rocks; minor chalcopyrite in iron-stained quartz on dump

Location: *S½SE¼ Sec. 26, T.7N., R.4W., SBBM, San Bernardino Co. (1)

Description: 50′ shaft

Geology: 4′ quartz vein dips steeply S in granitic rock

Name: Branch

Location: *S½NW¼ and N½SW¼ Sec. 35, T.7N., R.4W., SBBM, San Bernardino Co. (2,31)

Description: active 1880's, 1896, 1909, and 1931–35; $19,000–20,000 reported produced from 300′ adit with two 130′ raises to surface and several winzes below 200′; production 1889 reported to assay 2.89 oz. Au and 21.5 oz. Ag

Geology: 1′ wide vertical vein strikes N10°W in metavolcanic rocks; locally wall rocks contain much pyrite, minor galena and chalcopyrite

Name: Apex

Location: *NE¼SE¼SW¼ Sec. 35, T.7N., R.4W., SBBM, San Bernardino Co. (31)

Description: 300–400′ adit on shear zone

Geology: gold, silver, lead minerals reported in a shear zone that strikes N25°W, dips 50°S in metavolcanic rocks

Name: Oro Grande

Location: *SE¼NE¼ Sec. 35, T.7N., R.4W., SBBM, San Bernardino Co. (2)

Description: 1500′ shaft and 150′ shaft

Geology: pyrite in two parallel 1–4′ wide banded quartz veins in metavolcanic rocks

Location: *NW¼SW¼NE¼ Sec. 24, T.8N., R.2W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 10″ quartz vein strikes N65°E near contact of quartz monzonite and gabbro-diorite

Location: *N½SW¼ Sec. 2, T.9N., R.6W., SBBM, San Bernardino Co. (1)

Description: pits

Geology: quartz veins along N-trending shear zones in hornblende gabbro and quartz monzonite

Location: *W½NE¼NW¼ Sec. 12, T.9N., R.6W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: quartz vein in quartz monzonite

Location: S½NE¼ and SE¼ Sec. 7, T.9N., R.12W., SBBM, Kern Co. (1)

Description: numerous pits, trenches, and adits, one 250′ long

Geology: quartz(?) veins and stringers in rhyolite

Conclusions: shows little promise

Location: *N½N½N½ Sec. 8, T.9N., R.12W., SBBM, Kern Co. (1)

Description: 70′ incline

Geology: 6′ wide quartz vein strikes N81°W, dips 55°SW in quartz monzonite

Name: Tropico Group (*Big Three, Big Tree, Gold King, Hamilton, Home, Piute, Fairview, Kidd, Lida*)

Location: *SE¼ Sec. 10, S½ Sec. 11, N½N½ Sec. 14, and NE¼NE¼NE¼ Sec. 15, T.9N., R.13W., SBBM, Kern Co. (3,9,16,17,18,20,24,26)

Description: 300,000 tons mined 1904–52 with average tenor reported 0.38 oz. Au and 0.43 oz. Ag; four veins mined with major production from "Home" vein which was developed to a 900′ depth by a glory hole, three inclines, and 18,000′ of workings; "Lida" vein developed to 400′ depth below outcrop by a 300′ incline and 1000′ of drifts; "North #1" vein mined from crosscuts to "Home" and "Lida" shaft; minor activity on "North #2" vein; several other shafts and inclines

Geology: gold and pyrite in four veins that strike due E, dip 60–70°S in rhyolite breccia and rhyolite porphyry; 3–20′ wide Home vein averaged 6′ and crops out for 4000′

Name: Last Chance (*Nymph, Haeger, Hoeger*)

Location: *NE¼NE¼NE¼ Sec. 15, T.9N., R.13W., SBBM, Kern Co. (16,20,23,26)

Description: 100–200 tons with reported tenor of 0.3 oz. Au produced from 230′ shaft

Geology: 4′ wide vein strikes E, dips 60°S in rhyolite

Name: Milwaukee

Location: *N½NW¼ Sec. 16, T.9N., R.13W., SBBM, Kern Co. (16)

Description: 85′ shaft, 310′ shaft, and 250′ incline with 800′ workings

Geology: several veins strike E, dip 60°S in quartz monzonite and along bedding planes of overlying pyroclastic rocks

Name: Pedry (*Golden Witch, San Antonio*)

Location: *W½SW¼ and SW¼NW¼ Sec. 6 and W½ Sec. 7, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Name: Hoosier and Missouri(?)

Location: *S½S½NW¼ Sec. 18, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Climax (*Fredero*)

Location: *S½SE¼ Sec. 34, T.10N., R.2W., SBBM, San Bernardino Co. (2)

Description: shafts

Geology: 4–6″ quartz stringer strikes NW, dips SE in hornblende gneiss

Location: *NE¼NE¼NE¼ Sec. 12, T.10N., R.3W., SBBM, San Bernardino Co. (1)

Description: pits and shafts

Geology: NW-trending copper-stained shear zone in granodiorite

Name: Kramer Hills

Location: *Secs. 34, 35, and 36, T.10N., R.6W., SBBM, San Bernardino Co. (1)

Description: hundreds of shallow shafts and pits dug 1926–34 after discovery of small amount of "high-grade" in Sec. 35

Geology: rhyodacite intrusion into sandstone deposited pyrite and minor gold in fissures; associated placer gold deposited in gullies and ravines

Name: Mojave Mining and Milling (*Discovery, Double Standard, Gem, North Star, Mountain King, Single Standard*)

Location: *W½ Sec. 5, T.10N., R.12W., SBBM, Kern Co. (3,16,18,20,24,26)

Description: less than 100 tons with tenor of 1.1 oz. Au and 9 oz. Ag reported mined from 200′ shaft and three adits on vein prior to 1918

Geology: cerargyrite and argentite in discontinuous quartz stringers that strike NE, dip NW in rhyolitic rocks

Name: Monarch

Location: *SW¼ Sec. 5, T.10N., R.12W., SBBM, Kern Co. (16,24,26)

Description: 500–600′ adit to veins, pits and short adits expose southern extensions of Ajax and Karma veins of Wegman group

Geology: two quartz veins faulted out at S ends strike N10°W, dip 60°NE in rhyolite

Name: Golden Queen (*Echo, Gray Eagle, Queen Esther, Silver Queen, Soledad Extension*)

Location: *Sec. 6, T.10N., R.12W., SBBM, Kern Co. (9,16,24,26)

Description: over $10,000,000 in gold and silver values reported produced since 1894 with Au:Ag of 1:5; extensive workings exposed veins to over 800′ below outcrop and for over 3000′ of strike length; principal veins from E to W are: Queen Esther vein developed by six main adits with over 10,000′ workings on 11 levels; Silver Queen vein developed by more than 18,000′ workings on nine levels from two major shafts; the Star-

light and Golden Queen veins were developed by 27,500′ workings on nine levels through five adits; the Gray Eagle and Gypsy veins worked by a 2300′ adit; the Soledad Extension vein developed by 10,000′ workings on eight levels at 100′ intervals, 450′ and 600′ winze and 3000′ adit on vein; the Echo vein developed by 230′ adit to vein, and 1500′ workings

Geology: gold, cerargyrite, and argentite with minor galena, pyrite, and chalcopyrite in seven principal sub-parallel veins along faults that strike N10–40°W and dip 60°NE to 60°SW at the surface and flatten at depth in quartz latite porphyry, flow-banded rhyolite and rhyolite breccia; most productive lodes in intrusive rhyolite; post-mineral faults parallel to veins have displaced them up to 200′; veins crop out within 2000′ wide by 5000′ long belt and are from 200–900′ apart

Name: Elephant Group (*Hope, Excelsior, Lodestar, Elephant-Eagle*)

Location: *NW¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co. (3,16,18,23,24,26)

Description: about $250,000 in gold and silver with tenor of 0.5–0.75 oz. Au and Au:Ag of 3:4 reportedly produced 1896–1950 from 500′ incline, two 50′ shafts, a 150′ shaft, and a 400′ adit on vein; developed to over 240′ below outcrop and for strike length of over 500′

Geology: gold, cerargyrite, and argentite in three sub-parallel brecciated quartz veins 200–400′ apart that strike N10–25°W and dip 80°E to 70°W in rhyolite

Name: Bobtail

Location: *N½SW¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co. (16,24)

Description: $50,000–100,000 in gold and silver with tenor of about 0.52 oz. Au and 0.33 oz. Ag reported mined from 150′ incline and an adit to vein; intermittently active 1902–51 with major production 1923–42; "Bobtail" vein exposed to 200′ depth and for 1000′ on strike

Geology: gold, cerargyrite, and argentite in brecciated quartz vein that strikes N40°W, dips 80°NE in rhyolite

Name: Wegman Group (*Eureka, Grace Group, Karma*)

Location: *NE¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Silver)

Location: *Sec. 7, T.10N., R.12W., SBBM, Kern Co. (1)

Description: numerous shallow shafts, pits, trenches and several adits (one 460′ long)

Geology: quartz veins in rhyolite

Name: Western (*Hematite*)

Location: *E½NE¼ Sec. 8, T.10N., R.13W., SBBM, Kern Co. (16)

Description: 50′ adit, shallow incline, 50′ shaft and 20′ adit

Geology: vein strikes NW, dips 3°W in rhyolite

Name: Quien Sabe

Location: *W½ Sec. 9, T.10N., R.13W., SBBM, Kern Co. (16)

Description: 70′ shaft, 520′ adit to vein, and pit

Geology: two vertical quartz veins 2–4′ wide and 100′ apart strike N40°W in quartz latite porphyry

Name: Burton-Brite-Blank (part of *Middle Butte*)

Location: *S½NW¼ Sec. 16, T.10N., R.13W., SBBM, Kern Co. (16,24,26)

Description: active 1934 when $20,000 reportedly recovered from float; renewed activity 1958; major production from open cuts in landslide debris, 65′ shaft, 500′ adit to vein, 165′ adit and 400′ adit

Geology: landslide debris from vein outcrop at Middle Butte; gold with minor silver minerals in extension of Middle Butte vein 4–6′ wide that strikes N25°W, dips 40°E in quartz latite; kaolinite, alunite, and quartz gangue

Name: Middle Butte (*Trent, Rosamond Clay*)

Location: *SW¼ Sec. 16, T.10N., R.13W., SBBM, Kern Co. (16,24,26,30)

Description: active 1935–42, 1949; 1500 tons with reported tenor of 3 oz. Au yielded about $100 per ton from cuts; 500–600 tons of dump material reworked 1949 reportedly yielded 0.1–0.2 oz. Au per ton; 200′ shaft, 145′ shaft, 400′ adit, 1100′ adit to vein

Geology: gold with minor silver minerals in two parallel veins 800′ apart that strike N30°W, dip 50°NE in volcanic rocks; main vein 6–25′ wide with 1500′ lateral extent; 5′ wide Ella vein strikes N50°W, dips 60°NE; sparse autunite coatings (1.5 MR/hr.) reported along fractures in kaolinized porphyritic rocks

Name: Crescent

Location: *E½SE¼ Sec. 17, T.10N., R.13W., SBBM, Kern Co. (16)

Description: cuts and adits

Geology: NW-striking quartz vein in rhyolite

Name: Cactus Queen (*Blue Eagle, Cactus, Silver Prince, Winkler*)

Location: *SW¼NW¼ Sec. 17, T.10N., R.13W., SBBM, Kern Co. (9,16,24,26)

Description: over $5,000,000 reported produced from 1000′ incline, 600′ shaft, and 600′ incline; 230,000 tons with tenor of 0.35 oz. Au and 10 oz. Ag reported mined 1934–42; 7500 lbs. Cu and 2500 lbs. Pb reported as by-products 1941–43; 23,000 tons with tenor of 0.5 oz. Au and 0.9 oz. Ag reported mined 1948–58

Geology: proustite, argentite, electrum, and gold with iron, copper, lead, and zinc sulfides in quartz vein averaging 7′ wide that strikes N45°E and dips 35°SE for 4000′ along fault with quartz latite porphyry hanging wall and quartz monzonite footwall; quartz, alunite, kaolinite gangue

Name: B and B (*Old Jackass*)

Location: *NE¼SE¼NE¼ Sec. 8, T.11N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Location: NW¼ Sec. 1, T.11N., R.2W., SBBM, San Bernardino Co. (1)

Description: pits and shallow shafts

Geology: 20′ wide gossan zone containing minor copper staining strikes NW, dips 60°S in quartz monzonite

Conclusions: shows little promise

Name: Yellow Dog

Location: *NW¼NW¼ Sec. 32, T.11N., R.12W., SBBM, Kern Co. (9,16,20,23,24,26)

Description: active 1902, 1922 to early 1930's, and 1950–51; over 4500 tons with average tenor of 1.3 oz. Au and 8 oz. Ag reported produced from 336′ incline and 240′ incline, and several other shafts to 60′ deep; Au:Ag of 4:3 reported

Geology: gold and cerargyrite with minor sulfides in 2–15′ wide quartz-calcite veins that strike N20°W, dip 60°NE between quartz latite porphyry footwall and quartz monzonite hanging wall

Name: Standard Group (*Exposed Treasure, Yellow Rover, Desert Queen*)

Location: *NE¼ Sec. 32, T.11N., R.12W., SBBM, Kern Co. (3,9,15,16,23,24,26)

Description: active 1894–1915, 1921–42, and intermittently active 1945–56; over $3,500,000 in gold and silver reportedly produced, 75–80% of which was from Exposed Treasure vein; this vein traceable for over 3000′ on outcrop and explored to over 900′ down dip via incline leading to over 10,000′ of lateral workings; 290′ shaft on Yellow Rover vein and 400′ incline on Desert Queen vein with over 3000′ of lateral workings; several other inclines, shafts, adits and numerous pits

Geology: cerargyrite and gold with minor sulfides, carbonates, oxides, and silicates of copper, iron, and lead in a series of sub-parallel epithermal quartz veins that strike N15°E to N45°W, dip 25–70°SE to NE in quartz latite porphyry and quartz monzonite; Exposed Treasure vein 2–20′ wide and averages 6′ wide, Yellow Rover vein 1–3′ wide, and Desert Queen vein 2–6′ wide

Name: Gum Tree

Location: *E½ Sec. 32, T.11N., R.12W., SBBM, Kern Co. (1,16,26)

Description: 200 tons with average tenor of 0.2 oz. Au and 1.1 oz. Ag reported produced from two 200′ shafts

Geology: 4–6′ wide vein strikes N30°W, dips 60°NE in quartz latite porphyry and quartz monzonite

Name: Whitmore

Location: *NE¼SW¼ Sec. 32, T.11N., R.12W., SBBM, Kern Co. (16,18,23,24,26)

Description: intermittently active 1912–36 and active 1936–42, 1948–52; reported total production in excess of 7,500 tons with tenor of 0.3 oz. Au and 8 oz. Ag from three inclines to depths of 300′, 100′, and 280′

Geology: gold, cerargyrite, and sulfide minerals in two parallel quartz-calcite veins 2–6′ wide and 300′ apart that strike N30°W, dip 60–80°E in quartz latite porphyry and quartz monzonite

Name: Pride of Mojave (*Four Star*)

Location: *NW¼ Sec. 33, T.11N., R.12W., SBBM, Kern Co. (9,16,24)

Description: active 1934 and 1939–41; reportedly produced about 4,500 tons with tenor of 0.15 oz. Au and 0.5 oz. Ag which yielded 9000 lbs. Pb and 1800 lbs. Cu as by-products from 265′ incline and 240′ shaft with over 4000′ of workings

Geology: gold and cerargyrite with sulfide and carbonate minerals in several quartz-calcite veins that strike N20°W, dip 60–65°E mostly in quartz monzonite

Name: Ladd

Location: *NE¼ Sec. 36, T.11N., R.12W., SBBM, Kern Co. (26)

Description: 35′ shaft and several trenches, one 100′ long by 6′ deep

Geology: two parallel 4′ wide quartz veins strike E and dip steeply N in rhyolitic rock

Location: *S½SE¼SE¼ Sec. 31, T.12N., R.5W., SBBM, San Bernardino Co. (1)

Description: 20′ incline, 40′ incline (70°S) and several pits

Geology: copper-stained, brecciated quartz vein 3′ wide strikes N85°W in gneiss

Name: Silver Dome

Location: *Sec. 32, T.12N., R.5W., SBBM, San Bernardino Co. (1)

Description: inclines and several pits

Geology: bornite, chalcopyrite, covellite, and pyrite associated with siliceous limestone and quartz in gneiss

Name: Gold Quartz

Location: *N½ Sec. 33, T.12N., R.5W., SBBM, San Bernardino Co. (1)

Description: 26′ shaft and pits

Geology: silicified limestone lens 5′ wide strikes N60°E in gneiss

TRENDS

Location: W½NW¼ Sec. 9, T.11N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

IRON [Fe]

MINES AND PROSPECTS

Name: Altuda (*Globerson*)

Location: *SE¼NW¼NE¼ Sec. 1, T.7N., R.3W., SBBM, San Bernardino Co. (1,2)

Description: 100 tons of concentrate reported shipped 1942; 50′ shaft and short drifts expose Fe-bearing zone for 160′

Geology: magnetite-hematite stringers and veins one inch to two feet wide in five en echelon vertical vein systems that strike N55–85°E in metavolcanic rocks

LEAD [Pb]

MINES AND PROSPECTS

Name: Smith (*Iron Hat, Schmidt B. Copper*)

Location: *S½SE¼NE¼ Sec. 1, T.29S., R.38E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Rattlesnake Group

Location: *Sec. 32(?), T.29S., R.38E., MDBM, Kern Co.
(See under METALLICS, Gold)

Name: Austin Group (*Voss*)

Location: *S½ Sec. 9, and E½ Sec. 16, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: College Girl (*Confidence*) Group

Location: *E½E½NE¼ Sec. 18, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Apex

Location: *NE¼SE¼SW¼ Sec. 35, T.7N., R.4W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Pedry (*Golden Witch, San Antonio*)

Location: *W½SW¼ and SW¼NW¼ Sec. 6 and W½ Sec. 7, T.10N., R.2W., SBBM, San Bernardino Co. (1,2,10,31)

Description: active 1950–53; concentrate shipped reported to contain 26% Pb, 8.78 oz. Ag, 0.2 oz. Au, and 0.52% Cu; 270′ incline (70°E) with five levels in SE¼SE¼SW¼ Sec. 7, 200′ incline (70°E) and numerous pits and adits between inclines and along the vein for over one mile

Geology: cerrusite and anglesite with relict sulfide minerals in 2–10′ wide brecciated quartz vein that strikes NW, dips 70°E in granodiorite, gneissic diorite, and quartz monzonite porphyry

Name: Hoosier and Missouri(?)

Location: *S½S½NW¼ Sec. 18, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Wegman Group (*Eureka, Grace Group, Karma*)

Location: *NE¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Silver)

Name: Cactus Queen (*Blue Eagle, Cactus, Silver Prince, Winkler*)

Location: *SW¼NW¼ Sec. 17, T.10N., R.13W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Pride of Mojave (*Four Star*)

Location: *NW¼ Sec. 33, T.11N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

MANGANESE [Mn]

MINES AND PROSPECTS

Name: Austin Group (*Voss*)

Location: *S½ Sec. 9 and E½ Sec. 16, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Shamrock #2

Location: *Sec. 26, T.29S., R.40E., MDBM, Kern Co. (15,16)

Description: 15′ pit, 20′ drift; reported tenor of 20% Mn

Geology: siliceous manganese-oxide lenses in 1–2′ thick quartzite bed that crops out for 20′ and strikes N50°W, dips 30°N in schist

SILVER [Ag]

MINES AND PROSPECTS

Name: Mojave

Location: *Secs. 20 and 21, T.29S., R.38E., MDBM, Kern Co.
(See under METALLICS, Gold)

Name: Rattlesnake Group

Location: *Sec. 32(?), T.29S., R.38E., MDBM, Kern Co.
(See under METALLICS, Gold)

Name: Butte (*Big Butte, Butte Lode, Butte Wedge*)

Location: *NW¼SW¼ Sec. 36, T.29S., R.40E., MDBM, Kern Co.
(See under METALLICS, Gold)

Location: *SW¼SE¼(?) Sec. 28, T.31S., R.46E., MDBM, Kern Co.
(See under METALLICS, Copper)

Location: SE¼SE¼ Sec. 25, T.7N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Keystone

Location: *E½NE¼SE¼SE¼ Sec. 18, T.7N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: NW¼SW¼NE¼ Sec. 21, T.7N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Fearnot

Location: *NW¼SE¼SW¼ Sec. 28, T.7N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *E½ Sec. 29, T.7N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: SE¼SE¼ Sec. 33, T.7N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: E½NE¼NW¼ Sec. 33, T.7N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: N½NW¼NE¼SE¼ Sec. 33, T.7N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Branch

Location: *$S\frac{1}{2}NW\frac{1}{4}$ and $N\frac{1}{2}SW\frac{1}{4}$ Sec. 35, T.7N., R.4W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Apex

Location: *$NE\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$ Sec. 35, T.7N., R.4W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Tropico Group (*Big Three, Big Tree, Gold King, Hamilton, Home, Piute, Fairview, Kidd, Lida*)

Location: *$SE\frac{1}{4}$ Sec. 10, $S\frac{1}{2}$ Sec. 11, $N\frac{1}{2}N\frac{1}{2}$ Sec. 14, and $NE\frac{1}{4}NE\frac{1}{4}NE\frac{1}{4}$ Sec. 15, T.9N., R.13W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Waterman

Location: *$SW\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ Sec. 18, T.10N., R.1W., and $E\frac{1}{2}E\frac{1}{2}NE\frac{1}{4}NE\frac{1}{4}$ Sec. 13, T.10N., R.2W., SBBM, San Bernardino Co. (2,31)

Description: active 1882–87 when $1,700,000 in silver reported produced from 40,000 tons of ore; barite recovered from tailings in 1909, and 20 tons of barite (specific gravity 4.3) carrying 3 oz. Ag per ton reported daily recovery in 1931; workings to 500′ below outcrop consist of three shafts (400′, 300′, and 250′ deep) with over 1000′ of drifts on six levels; shallow shafts on smaller zones

Geology: silver, cerargyrite and minor sulfides in barite-jasper zone 1–8′ wide and about 1200′ long strikes N, dips 75–85°W along bedding of sedimentary and volcanic rocks

Name: Hope

Location: *$NE\frac{1}{4}NE\frac{1}{4}$ Sec. 35, T.10N., R.1W., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Barite)

Name: Lead Mountain

Location: *$NW\frac{1}{4}NW\frac{1}{4}NE\frac{1}{4}$ and $NE\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$ Sec. 36, T.10N., R.1W., SBBM, San Bernardino Co. (7,19,25,31)

Description: active (for silver) 1880–90 and (for barite) 1931–33; reported daily production of 20 tons of barite in 1930; cuts and adits for 500′ along zone, 75′adit to zone (Sec. 36) and 1300′ adit to zone (collared in Sec. 25); reported to contain 6–30 oz. Ag, 0.018–0.096 oz. Au, 15–30% Pb, and 0–6.25% Zn

Geology: silver, cerargyrite, and sulfides in 100′ wide quartz-barite-carbonate zone that strikes NW, dips 40°E along a fault in silicified and altered tuff, sandstone and shale; zone crops out for 310′ and pinches to 2′ width 145′ below outcrop

Name: Pedry (*Golden Witch, San Antonio*)

Location: *$W\frac{1}{2}SW\frac{1}{4}$ and $SW\frac{1}{4}NW\frac{1}{4}$ Sec. 6, and $W\frac{1}{2}$ Sec. 7, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Name: Hoosier and Missouri(?)

Location: *$S\frac{1}{2}S\frac{1}{2}NW\frac{1}{4}$ Sec. 18, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Location: *SE¼NE¼NW¼ Sec. 19, T.10N., R.2W., SBBM, San Bernardino Co. (2)

Description: pit

Geology: silver and barite in rhyolite-dacite flows

Location: E½E½SE¼ Sec. 1, T.10N., R.3W., SBBM, San Bernardino Co. (1)

Description: several pits and shallow shafts; selected sample assayed 0.04 oz. Au and 8.73 oz. Ag

Geology: NW-trending copper-stained shear zone in granodiorite

Conclusions: warrants further investigation

Location: *NE¼NE¼NE¼ Sec. 12, T.10N., R.3W., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Mojave Mining and Milling (*Discovery, Double Standard, Gem, North Star, Mountain King, Single Standard*)

Location: *W½ Sec. 5, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Golden Queen

Location: *Sec. 6, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Elephant Group

Location: *NW¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Bobtail

Location: *N½SW¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Location: *Sec. 7, T.10N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Wegman Group (*Eureka, Grace Group, Karma*)

Location: *NE¼ Sec. 6, T.10N., R.12W., SBBM, Kern Co. (3,16,18,24,26)

Description: active 1896–1909, 1918–26, 1937–41, 1951–58; production from glory hole, shafts, and adits on veins; tenor of 50 oz. Ag reported for period 1896–1903, 5–9 oz. Ag for 1937–41; and 27 tons produced 1951 reported to have contained 7000 oz. Ag, 10 oz. Au, 251 lbs. Pb, and 40 lbs. Cu

Geology: cerargyrite, argentite, gold, and chalcopyrite with minor stibnite and galena in five sub-parallel quartz veins to 15′ wide that strike about N20–25°W, dip steeply E and W in quartz latite porphyry and rhyolite

Name: Burton-Brite-Blank (part of *Middle Butte*)

Location: *S½NW¼ Sec. 16, T.10N., R.13W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Middle Butte (*Trent, Rosamond Clay*)

Location: *SW¼ Sec. 16, T.10N., R.13W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Cactus Queen (*Blue Eagle, Cactus, Silver Prince, Winkler*)

Location: *SW¼NW¼ Sec. 17, T.10N., R.13W., SBBM, Kern Co.
(See under METALLICS, Gold)

Location: SE¼NE¼SW¼ Sec. 5, T.11N., R.1W., SBBM, San Bernardino Co. (1)

Description: pit and shaft; selected samples assayed 0.005–0.06 oz. Au and 0.6–11.0 oz. Ag

Geology: NE-trending quartz vein in quartz monzonite

Conclusions: shows limited promise

Name: B and B (*Old Jackass*)

Location: *NE¼SE¼NE¼ Sec. 8, T.11N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Yellow Dog

Location: *NW¼NW¼ Sec. 32, T.11N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Standard Group (*Exposed Treasure, Yellow Rover, Desert Queen*)

Location: *NE¼ Sec. 32, T.11N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Gum Tree

Location: *E½ Sec. 32, T.11N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

Name: Whitmore

Location: *NE¼SW¼ Sec. 32, T.11N., R.12W., SBBM, Kern Co.
(See under METALLICS, Gold)

TRENDS

Location: S½S½ Sec. 25, T.10N., R.1W., SBBM, San Bernardino Co.

Geology: potential silver-barite mineralization in silicified and altered tuff, sandstone, and shale

Location: W½NW¼ Sec. 9, T.11N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

TUNGSTEN [W]

MINES AND PROSPECTS

Name: Austin Group (*Voss*)

Location: *S½ Sec. 9 and E½ Sec. 16, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Name: Consolidated (*Good Hope, Kenyon*)

Location: *NE¼SE¼ Sec. 35, T.29S., R.40E., MDBM, Kern Co.
(See under METALLICS, Gold)

Name: Billie Burke

Location: *SE¼ Sec. 35, T.29S., R.40E., MDBM, Kern Co. (16,23)

Description: two 100′ inclines

Geology: irregular scheelite-bearing tactite veins and lenses to 8″ wide strike N70°W, dip 55°S in schist

Name: Butte (*Big Butte, Butte Lode, Butte Wedge*)

Location: *NW¼SW¼ Sec. 36, T.29S., R.40E., MDBM, Kern Co.
(See under METALLICS, Gold)

Name: Moonlight (*Scheelite Queen, Tungsten King*)

Location: *E½ Sec. 32, T.31S., R.47E., MDBM, San Bernardino Co. (1,31)

Description: pits and trenches

Geology: locally copper-stained scheelite-bearing quartz vein to 3′ wide trends NE for over 1000′ and dips NW in diorite; smaller veins and stringers exposed for less than 100′

Location: *W½NW¼ Sec. 34, T.31S., R.47E., MDBM, San Bernardino Co. (1)

Description: pit

Geology: tactite zone in quartzite and schist adjacent to quartz monzonite

Name: Miller

Location: *Secs. 11 and 12, T.32S., R.35E., MDBM, Kern Co. (16)

Description: pit

Geology: scheelite in tactite in small roof pendants

Location: E½E½SE¼ Sec. 1, T.8N., R.7W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: scheelite in discontinuous garnet-epidote skarn zone in quartz monzonite

Conclusions: shows little promise

URANIUM

MINES AND PROSPECTS

Name: Dawn

Location: *SW¼ Sec. 13, T.29S., R.37E., MDBM, Kern Co. (16)

Description: pits

Geology: uranophane as fracture coatings in silicified clay

Name: Beryl Group (*Josie Bishop*)

Location: *NW¼ Sec. 30, T.29S., R.37E., MDBM, Kern Co. (16,26)

Description: 12 lode claims; several shafts to 103′ deep

Geology: gold, copper, and autunite-bearing vertical quartz veins strike N50°W in rhyolitic dikes and granitic rocks

Name: Big Bully

Location: *Sec. 6, T.29S., R.38E., MDBM, Kern Co. (16)

Description: pit

Geology: secondary uranium minerals in 4′ thick chert bed

Location: *SW¼SW¼SW¼ Sec. 16 and N½NE¼ Sec. 20, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: shallow pits

Geology: meager carnotite(?) along fractures in tuffaceous sandstone

Name: Jumpin

Location: *NW¼ Sec. 9 and Sec. 10, T.9N., R.13W., SBBM, Kern Co. (16,30)

Description: 25′ trench, 10′ pit and shallow cuts; chip samples reported to analyse 0.002–0.037% U_3O_8, average 0.02% U_3O_8

Geology: autunite and gummite(?) with iron oxides as fracture coatings in altered rhyolite dike intruding quartz monzonite

Name: Dono-han

Location: *SE¼NW¼(?) Sec. 10, T.9N., R.13W., SBBM, Kern Co. (16,30)

Description: active 1958; 53′ shaft, short adit, and shallow trenches; 0.41–0.51% U_3O_8 reported

Geology: autunite, meta-autunite, and uranophane(?) coating fractures that trend N75°W and N30°E, and disseminated in 50′ wide dike that trends easterly for about 2000′ and dips steeply S

Name: Mamie

Location: *Sec. 18, T.10N., R.12W., SBBM, Kern Co. (16,30)

Description: pit

Geology: fracture coatings with radioactivity 12 times background reported in shear zone that strikes N32°W, dips 70°N in rhyolite

Name: Bluett

Location: *NW¼ Sec. 9, T.10N., R.13W., SBBM, Kern Co. (16,30)

Description: pit

Geology: radioactivity 15 times background reported along autunite-bearing E-trending fault in tuffaceous sandstone and quartz monzonite

Name: Rosamond

Location: *SE¼SE¼SW¼ Sec. 25, T.10N., R.13W., SBBM, Kern Co. (16,29,30)

Description: pits, short adits, and 15 drill holes, 12 samples reported to analyse 0.002–0.59% U_3O_8 with average of 0.087% U_3O_8

Geology: thin coatings of autunite and gummite(?) on fractures and disseminated near faults in tuffaceous sediments; uranium minerals erratically and sparsely distributed over an area of about 15 acres

Name: Stillwell

Location: *Sec. 35, T.10N., R.13W., SBBM, Kern Co. (16,30)

Description: three trenches; 0.09–0.14% U_3O_8 reported

Geology: erratically distributed autunite in joints, bedding planes, and disseminated near vertical faults that strike N70°E in tuffaceous sediments

Name: Verdi Development Co.

Location: *Sec. 36, T.10N., R.13W., SBBM, Kern Co. (16,30)

Description: active 1954–57; 90′ crosscut adit to 200′ long by 150′ wide by 30′ deep Pit No. 1, Pit No. 2 is 200′ long by 50–75′ wide by 50′ deep, and Pit No. 3 is 50–100′ wide by 150′ long by 25′ deep; crosscut adit 125′ long

Geology: meta-autunite and uranophane disseminated and in stringers ¼″ to several inches wide along fault that strikes N65°E, dips 55°NW between pyroclastic rocks and quartz monzonite

Location: NE¼SW¼NW¼ Sec. 1, T.11N., R.1W., SBBM, San Bernardino Co. (1)

Description: pit; reported radioactivity 2.5 times background

Geology: green fluorescent mineral (torbernite?) in minor shear zone in garnetiferous metasedimentary rocks

Conclusions: shows little promise

Name: Vanuray

Location: *NW¼NE¼NE¼ Sec. 26, T.11N., R.8W., SBBM, Kern Co. (1,16)

Description: cut about 150′ by 60′ by 15′ deep

Geology: carnotite with opal in shear zones and as sparse disseminations in sandy clay

OCCURRENCES

Location: *Sec. 35(?) T.32S., R.35E., MDBM, Kern Co. (16)

Geology: secondary uranium minerals as fracture coatings and disseminations in tuffaceous sandstone

Location: SE¼NW¼SW¼ Sec. 15, T.32S., R.44E., MDBM, San Bernardino Co. (1)

Geology: sparse autunite(?) coating in impure clay bed underlying basalt

Conclusions: shows little promise

Location: *E½SW¼ Sec. 4, T.9N., R.13W., SBBM, Kern Co. (16,30)

Geology: slight concentrations of radioactive mineral as fracture coatings with iron oxides in brecciated dacite; 0.001–0.041% U_3O_8 reported

ZINC [Zn]

MINES AND PROSPECTS

Name: College Girl (*Confidence*) Group

Location: *E½E½NE¼ Sec. 18, T.29S., R.39E., MDBM, Kern Co.
(See under METALLICS, Copper)

Open-pit borate mine and plant of United States Borax & Chemical Corporation. Pit with 1300-foot conveyor system is in Sec. 23, T.11N., R.8W., SBBM, Kern Co. Photo taken March, 1961. (Courtesy of United States Borax & Chemical Corp.)

Industrial Rocks and Minerals

The introductory paragraph relating to deposits[1] of industrial rocks and minerals in PART I (see page 19) is also pertinent here.

Of the Southern Pacific properties listed, the following in the PART II area are considered to be the most promising:

BORON:
Sec. 21, T.11N., R.7W., SBBM, San Bernardino Co.

BROKEN STONE:
$S\frac{1}{2}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 23, T.32S., R.35E., MDBM, Kern Co.
$N\frac{1}{2}SE\frac{1}{4}NE\frac{1}{4}$ Sec. 7, T.9N., R.12W., SBBM, Kern Co.
$S\frac{1}{2}SE\frac{1}{4}SW\frac{1}{4}$ Sec. 3, T.11N., R.10W., SBBM, Kern Co.

LIMESTONE:
$E\frac{1}{2}$ Sec. 13, T.9N., R.4W., SBBM, San Bernardino Co.

PUMICE:
$S\frac{1}{2}SE\frac{1}{4}$ Sec. 7 and $N\frac{1}{2}NW\frac{1}{4}$ Sec. 17, T.32S., R.46E., MDBM, San Bernardino Co.

QUARTZ:
$S\frac{1}{2}SE\frac{1}{4}SW\frac{1}{4}$ and $SW\frac{1}{4}SE\frac{1}{4}$ Sec. 5, T.11N., R.1W., SBBM, San Bernardino Co.

SAND AND GRAVEL:
$S\frac{1}{2}$ Sec. 9, T.29S., R.40E., MDBM, Kern Co.

ABRASIVES

MINES AND PROSPECTS

Name: Black Mountain Group, Opal Extension and S. Opal (*New Joshua*)

Location: *$S\frac{1}{2}S\frac{1}{2}SE\frac{1}{4}$ Sec. 32, (Black Mtn.) T.28S., R.38E., and $NW\frac{1}{4}NW\frac{1}{4}NE\frac{1}{4}$ Sec. 4,

[1] Deposits at locations indicated by * are not owned by Southern Pacific.

(Opal), SW¼SW¼NE¼ Sec. 5, and Sec. 8, T.29S., R.38E., MDBM, Kern Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Pumice, Pumicite, Tuff, and Volcanic Cinders)

Name: Calsilico

Location: *SE¼SE¼ Sec. 33, T.28S., R.38E., and NE¼NE¼ Sec. 4, T.29S., R.38E. MDBM, Kern Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Pumice, Pumicite, Tuff, and Volcanic Cinders)

Name: Queenie

Location: *NW¼NW¼NW¼ Sec. 24, T.29S., R.37E., MDBM, Kern Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Pumice, Pumicite, Tuff, and Volcanic Cinders)

Name: Cudahy

Location: *SW¼SW¼ Sec. 5 and N½N½NW¼ Sec. 8, T.29S., R.38E., MDBM, Kern Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Pumice, Pumicite, Tuff, and Volcanic Cinders)

Name: Parrott and Allee Silica

Location: *Sec. 18, T.29S., R.38E., MDBM, Kern Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Pumice, Pumicite, Tuff, and Volcanic Cinders)

Name: J. and L. Claim

Location: *NW¼ Sec. 18, T.29S., R.38E., MDBM, Kern Co. (16)

Description: rectangular honing blocks marketed in 1956

Geology: yellowish, silicified, tuffaceous beds in Ricardo fm. strike NNE, dip 20–30°NW; interlayered with basalt flows

Location: *NW¼SE¼NW¼, NE¼SW¼SE¼ and SE¼SW¼SE¼ Sec. 2, and NW¼NE¼NE¼ Sec. 11, T.9N., R.1W., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Pumice, Pumicite, Tuff, and Volcanic Cinders)

BARITE [$BaSO_4$]

MINES AND PROSPECTS

Name: Big Medicine

Location: *Sec. 2(?), T.9N., R.1W., SBBM, San Bernardino Co. (7,25,31)

Description: cut 15′ deep, 20′ wide, 50′ long

Geology: coarse to finely crystalline barite veins 4–8′ wide strike N45°W, dip 30°NE in weathered schistose and dolomitic rocks

Name: Waterman

Location: *SW¼NW¼NW¼ Sec. 18, T.10N., R.1W., and E½E½NE¼NE¼ Sec. 13, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Barium Queen

Location: *NW¼ Sec. 27 and S½S½SW¼ Sec. 22, T.10N., R.1W., SBBM, San Bernardino Co. (7,17,25,31)

Description: discovered 1915; explored by 310′ adit on vein; 16′ winze, two stopes on main vein; six shafts 25–60′ deep, shallow cuts on Middle vein, four pits and one 20′ shaft on West vein; about 20 carloads shipped 1930 for use in oil-well drilling mud; no production 1930–59; Middle and West veins reportedly contain appreciable reserves of minable barite

Geology: series of parallel barite-quartz veins dip 70° in quartzite and biotite-hornblende gneiss; East vein exposed for 3,400′, Middle vein for 6,200′, West vein for 4800′; barite more than 1′ wide in Middle vein; main vein 5′ wide contains 85–96% $BaSO_4$

Name: Hope

Location: *NE¼NE¼ Sec. 35, T.10N., R.1W., SBBM, San Bernardino Co. (1)

Description: two shafts

Geology: N-trending shear zones consisting of dark, siliceous, brecciated vein material, with abundant specular hematite and barite, in tuffaceous sedimentary rocks

Name: Lead Mountain

Location: *NW¼NW¼NE¼ and NE¼NE¼NW¼ Sec. 36, T.10N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *SE¼NE¼NW¼ Sec. 19, T.10N., R.2W., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

OCCURRENCES

Location: SE¼SE¼SE¼ Sec. 1, T.10N., R.3W., SBBM, San Bernardino Co. (1)

Geology: barite as fracture fillings in NNW-trending shear zone

Conclusions: shows little promise

TRENDS

Location: S½S½ Sec. 25, T.10N., R.1W., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

BORON [B]

MINES AND PROSPECTS

Name: Cotton Ball Borax

Location: *Sec. 8, T.30S., R.38E., MDBM, Kern Co. (6,16)

Description: located 1896; three carloads produced to 1929

Geology: ulexite deposited near the playa surface by solar evaporation

Name: American Borax Co.

Location: *$SW\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$ and $NE\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$ Sec. 25, T.10N., R.1W., SBBM, Kern Co. (1,31)

Description: worked 1900–07; three open pits, 400′ inclined shaft with 1000′ of drifts; other minor workings

Geology: 8–14% anhydrous boric acid contained in several borate-rich beds in shale unit 15–20′ thick

Name: United States Borax & Chemical Corp. (see photo, page 64)

Location: *Secs. 18 and 19, T.11N., R.7W. and Secs. 13, 14, 15, 19, 21, 22, 23 and 24, T.11N., R.8W., SBBM, Kern Co. (16,19,26)

Description: borates discovered in 1913, in 450′ Suckow water well in $NW\frac{1}{4}$ Sec. 22; several million short tons of crude produced by underground methods to 1957, of which about two million tons produced 1926–46; major mines were the Baker in $NW\frac{1}{4}NW\frac{1}{4}$ Sec. 19, T.11N., R.7W., West Baker in $SW\frac{1}{4}SE\frac{1}{4}$ Sec. 14, and Jenifer in $E\frac{1}{2}NE\frac{1}{4}$ Sec. 23 and $W\frac{1}{2}NW\frac{1}{4}$ Sec. 24; since June 1957, mined from open pit 2550′ long, 1850′ wide, and 325′ deep (1961) in $NE\frac{1}{4}$ Sec. 23

Geology: largest sodium borate deposit in the world; occurs beneath 137–1000′ of alluvium and lake beds in a Mio-Pliocene basin filled with lacustrine sediments of the Tropico Group; deposit is a lens, roughly oval in plan, estimated to be about four miles long (E-W), $\frac{3}{4}$ to one mile wide, and about 250′ in maximum thickness; central portion, $1\frac{1}{2}$-2 miles long (E-W) and $\frac{1}{2}$-1 mile wide, is sodium borate containing about 50% borax and 50% kernite; the remainder of the deposit is largely colemanite (calcium borate) and ulexite (sodium calcium borate)

Name: Mudd (*Western, Little Placer*)

Location: *$SW\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$, $NW\frac{1}{4}NW\frac{1}{4}SE\frac{1}{4}$ and $NE\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$ Sec. 24, T.11N., R.8W., SBBM, Kern Co. (16,19,26)

Description: produced 160,000 tons sodium borate 1927–33; development work in 1959; No. 1 shaft 856′ deep with NE crosscut; extensive underground workings to depths of 1140′; ore stoped; two other shafts

Geology: massive bed of sodium borates 50–100′ thick at average depth of 1000′; ore minerals are kernite and borax, enclosed by probertite and ulexite in shales; folded into an anticline plunging 10–15°NE; on the S, the borate beds lens out abruptly

OCCURRENCES

Location: *Secs. 18, 19, 30, and $N\frac{1}{2}$ Sec. 31, T.11N., R.6W., SBBM, San Bernardino Co. (1)

Geology: test holes intersected colemanite from 650–700′ and beds containing 7–20% B_2O_3 to depth of 1730′

TRENDS

Location: Sec. 21, T.11N., R.7W., SBBM, San Bernardino Co. (1)

Geology: similar environment as at known deposits

BROKEN STONE

MINES AND PROSPECTS

Location: S½SE¼SE¼ Sec. 23, T.32S., R.35E., MDBM, Kern Co. (1)

Description: rock formerly quarried for road metal; inactive

Geology: small, white, rhyolite (quartz latite) plug; hard, tough, durable

Conclusions: source of stone for roofing granules, road metal, riprap, aggregate, etc.

Name: White Lime Rock Company

Location: *SW¼NE¼NW¼ and SE¼NW¼NW¼ Sec. 25, T.6N., R.4W., SBBM, San Bernardino Co. (1,2)

(See under INDUSTRIAL ROCKS AND MINERALS, Limestone)

Location: *NE¼NE¼NW¼ Sec. 1, T.9N., R.1W., SBBM, San Bernardino Co. (1)

Description: small pit for roofing granule material

Geology: pale purple felsite

Location: *NE¼NE¼NW¼ Sec. 5, T.9N., R.1W., SBBM, San Bernardino Co. (1)

Description: roofing granule quarry

Geology: pale red rhyodacite plug

Location: N½SE¼NE¼ Sec. 7, T.9N., R.12W., SBBM, Kern Co. (1,16)

Description: main quarry 100′ by 100′ by 35′ deep; other smaller quarries

Geology: rose and pink granules obtained from rhyolitic flows and tuffs that strike N25°W, dip 60–80°E; white, yellow, pale green and lavender rocks obtained from small quarries N and S of main quarry

Conclusions: excellent source of colored stone suitable for landscaping and roofing materials

Name: Mojave Rock Products

Location: *W½ Sec. 8, T.9N., R.12W., SBBM, Kern Co. (1,16)

Description: quarry

Geology: pink and green stone produced from Miocene rhyolitic flows and tuffs

Name: Desert Rock Milling Co.

Location: *SE¼SW¼NW¼ and N½N½SW¼ Sec. 8, T. 9N., R.12W., SBBM, Kern Co. (1,16)

Description: quarries

Geology: stone for granules produced from pink, banded Miocene rhyolitic flows and tuffs; beds strike about N20°W, dip 45°NE

Name: Desert Rock Milling Co.

Location: *NE¼NE¼SE¼ Sec. 8 and NW¼NW¼SW¼ Sec. 9, T.9N., R.12W., SBBM, Kern Co. (1,16)

Description: Rosamond mill produces roofing granules from various quarries; 10–12 men employed in 1963

Geology: Tertiary volcanic rocks

Location: *NE¼NW¼NW¼ and NW¼NE¼NW¼ Sec. 33 and SW¼SW¼SW¼ Sec. 28, T.10N., R.1W., SBBM, San Bernardino Co. (1)

Description: three quarries; operating 1959

Geology: reddish-brown rhyolite

Name: Mojave Rock Products

Location: *SW¼SW¼SW¼ Sec. 4, T.10N., R.12W., SBBM, Kern Co. (16)

Description: quarry

Geology: "gold" colored stone for granules obtained from Miocene quartz latite

Location: *NE¼SW¼NE¼ Sec. 22, T.11N., R.1W., SBBM, San Bernardino Co. (1)

Description: small quarry is source of lavender stone for roofing granule material

Geology: lavender hornblende andesite of Miocene Pickhandle fm.

Location: *NW¼SW¼SW¼ Sec. 18, T.11N., R.9W., SBBM, Kern Co. (1)

Description: quarry; stone used locally as road metal

Geology: Saddleback basalt

OCCURRENCES

Location: *NE¼NW¼NE¼ Sec. 26, T.32S., R.35E., MDBM, Kern Co. (1)

Geology: small, white, dense, rhyolite plug

Location: *Sec. 31, T.10N., R.3W., SBBM, San Bernardino Co. (1)

Geology: limestone and quartzite of Oro Grande sequence may have value for limited use as crushed rock

Location: S½SE¼SW¼ Sec. 3, T.11N., R.10W., SBBM, Kern Co. (1)

Geology: dacite plug

Conclusions: source of roofing granule material

CLAYS

MINES AND PROSPECTS

Name: Iron Canyon Bentonite (*Brown-White, Seisomite*)

Location: *N½NE¼SE¼ Sec. 25, T.29S., R.37E., MDBM, Kern Co. (6,16,26)

Description: small cuts and a short adit; produced several thousand tons 1920–24

Geology: pale gray to tan, waxy bentonite 5–10′ thick in Pliocene Ricardo fm.; locally gypsiferous; beds strike N25°E, dip 22°NW

Name: Stevens

Location: *S½SE¼ Sec. 17, T.29S., R.38E., MDBM, Kern Co. (6,16,26)

Description: three short adits

Geology: white to pale gray, bedded, lithic tuff partially altered to bentonite; in Pliocene Ricardo fm.

Name: Koehn (*Red Rose*)

Location: *NE¼NE¼NW¼ Sec. 20, T.29S., R.38E., MDBM, Kern Co. (6,16)

Description: developed by two short adits, N75°W, and N40°E

Geology: 8′-thick interval contains beds of white bentonite in Pliocene Ricardo fm.; beds strike N40°E, dip 19°NW

Name: White Clay #1 and #2

Location: *W½SW¼NW¼ Sec. 29 and E½SE¼NE¼ Sec. 30, T.29S., R.38E., MDBM, Kern Co. (6,16)

Description: short cut and 20′ adit

Geology: white to pale gray bentonite interbedded with thin siliceous layers, and overlain by basalt; clay-bearing beds strike N20°E and dip 20°N in Pliocene Ricardo fm.

Name: Snow White

Location: *NE¼NW¼NE¼ Sec. 30, T.29S., R.38E., MDBM, Kern Co. (6,16,26)

Description: two open cuts 200–250′ long, 100–125′ wide, and 12–30′ deep; produced several thousand tons of filter clay in 1920's, 1930's

Geology: pale tan to white bentonite bed 15′ thick in Pliocene Ricardo fm.; strikes N45°E, dips 17°N

Name: Hancock

Location: *SE¼NW¼ Sec. 30, T.29S., R.38E., MDBM, Kern Co. (6)

Description: filter clay from open cut

Geology: altered Pliocene volcanic tuff bed

Name: Red Hill

Location: *NE¼SE¼ Sec. 29, T.30S., R.37E., MDBM, Kern Co. (16)

Description: small open cut yielded 3,000–4,000 tons clay 1920–21

Geology: 30′ clay beds with intercalated agglomerates and flows exposed for several hundred feet by canyon in Pliocene Ricardo fm.

Location: *SW¼SW¼ Sec. 34, T.32S., R.35E., MDBM, and NW¼NW¼ Sec. 36, T.12N., R.13W., SBBM, Kern Co. (16)

Description: several large trenches

Geology: brown to greenish-gray bentonite bed 30′ thick in Pliocene Horned Toad fm. strikes N55°E, dips 26°NW; swells slightly; contains some gypsum

Location: *SE¼SE¼SE¼ Sec. 20, T.7N., R.3W., SBBM, San Bernardino Co. (1)

Description: short adit and shallow pit

Geology: altered metavolcanic rocks

Name: Snow White

Location: *NE¼SE¼SW¼ Sec. 26, T.7N., R.3W., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Mica)

Location: SW¼NE¼ and NW¼SE¼ Sec. 9, T.7N., R.4W., SBBM, San Bernardino Co. (1)

Description: shallow pits, two adits; estimated 50,000 to 100,000 tons containing much sericite, some montmorillonite; possibly useful as filler or carrier

Geology: white to brown clay in altered, sheared metavolcanic rocks

Conclusions: shows limited promise

Name: Three Buttes

Location: *NW¼NW¼SE¼ Sec. 15, T.7N., R.4W., SBBM, San Bernardino Co. (1,2)

Description: several open cuts produced 5,000–7,000 tons; reserves estimated at over 65,000 tons (1954)

Geology: 100′ by 200′ lens of white clay in metavolcanic rocks along shear zone

Name: Marter-White

Location: *W½SE¼ Sec. 27, T.7N., R.4W., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Mica)

Location: W½W½ Sec. 33, T.8N., R.4W., SBBM, San Bernardino Co. (1)

Description: 80′ adit in W½NW¼ and 25′ adit in W½SW¼ and pit expose white clay-like material

Geology: principally quartz with minor sericite, montmorillonite, and unaltered feldspar

Conclusions: shows limited promise as a source of material for use as an inert filler or inert carrier

Name: Monarch Minerals

Location: *NE¼NE¼SE¼ Sec. 12, T.9N., R.1W., SBBM, San Bernardino Co. (1)

Description: several hundred tons of bentonite mined from two shallow shafts

Geology: altered rhyolite tuff

Name: Riley

Location: *Sec. 19, T.9N., R.11W., SBBM, Kern Co. (16,26)

Description: clay produced for oil well drilling mud

Geology: playa lake deposit

Name: Los Angeles

Location: *SE¼NW¼SE¼ Sec. 11, T.9N., R.13W., SBBM, Kern Co. (3,16)

Description: 200′ adit and pit 150′ by 75′ by 25′ deep produced pottery and brick clay

Geology: greenish-gray, hard and granular claystone with dark impurities

Location: S½S½ Sec. 25, T.10N., R.1W., SBBM, San Bernardino Co. (1,7)

Description: 1300′ adit and 800′ adit; analysis of sample showed montmorillonite

Geology: altered rhyolite tuff

Conclusions: shows limited promise

Location: *E½SW¼SW¼ Sec. 9, T.10N., R.8W., SBBM, Kern Co. (1)

Description: drilling mud produced from cut

Geology: bentonitic clay in playa

Location: *W½NW¼SW¼ Sec. 16, T.10N., R.8W., SBBM, Kern Co. (1)
Description: drilling mud produced from cut
Geology: bentonitic clay in playa

Location: *SE¼SE¼SE¼ Sec. 25, T.11N., R.1W., SBBM, San Bernardino Co. (1)
Description: pit
Geology: bentonitic clay

Name: Amargo (*Vanuray*)
Location: *NW¼NE¼NE¼ Sec. 26, T.11N., R.8W., SBBM, Kern Co. (1,26)
Description: about 6,000 tons mined from cut 150′ by 60′ by 15′ deep in 1940–41
Geology: white bentonite interbedded with shale and sandstone

DECOMPOSED GRANITE

MINES AND PROSPECTS

Location: *NE¼NE¼NW¼ Sec. 32, T.32S., R.35E., MDBM, Kern Co. (1)
Description: gravel pit and loading bin
Geology: quartz monzonite gruss

Location: *NW¼NW¼SW¼ Sec. 14, T.8N., R.4W., SBBM, San Bernardino Co. (1)
Description: material from gravel pit used locally for road metal
Geology: quartz monzonite gruss

Location: *N½SE¼SW¼ Sec. 29, T.11N., R.10W., SBBM, Kern Co. (1)
Description: gravel pit
Geology: quartz monzonite gruss

DECORATIVE AND DIMENSION STONE

MINES AND PROSPECTS

Location: *NW¼SE¼ and SE¼SE¼NW¼ Sec. 3, T.5N., R.4W., SBBM, San Bernardino Co. (1)
Description: quarry
Geology: sheeted and jointed quartz monzonite

Location: SE¼NW¼NE¼ Sec. 3, T.5N., R.4W., SBBM, San Bernardino Co. (1)
Description: three quarries
Geology: sheeted and jointed quartz monzonite
Conclusions: shows limited promise

Name: Verde Antique (*Kimball, Gem, Alamo Consolidated*)

Location: *W½SE¼NW¼ Sec. 28, T.7N., R.2W., SBBM, San Bernardino Co. (2)

Description: quarry 60–100′ wide produced 400 tons by 1904; large reserve

Geology: variegated yellow, white and brown marble roof pendant of metamorphosed Oro Grande dolomite

OCCURRENCES

Location: SE¼ Sec. 5 and SE¼ Sec. 7, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Geology: pink, platy rhyolite

Conclusions: shows limited promise for flagstone

DOLOMITE [$CaMg(CO_3)_2$]

MINES AND PROSPECTS

Name: Hinkley

Location: *S½SE¼ Sec. 11 and NW¼SW¼SW¼ Sec. 12, T.9N., R.4W., SBBM, San Bernardino Co. (1,2,12)

Description: three quarries worked in 1944 by Kaiser Steel; representative sample analysed 3.03% SiO_2, 0.25% Al_2O_3, trace Fe_2O_3, 28.98% CaO, 20.93% MgO, and 48.86% LOI

Geology: several hundred thousand tons of white to light gray, coarsely crystalline dolomite in roof pendant in quartz monzonite

FELDSPAR

MINES AND PROSPECTS

Name: White Butte

Location: *W½W½NE¼ Sec. 18, T.31S., R.44E., MDBM, San Bernardino Co. (31)

Description: quarry 125′ by 200′ by 30′ deep produced 17,000 tons ceramic-grade feldspar 1940–52

Geology: 200′ by 300′ pegmatite trends W, dips steeply E in hornblende tonalite; contains quartz lenses up to 60′ long; about 70% of the pegmatite is pale pink, coarse-grained perthitic microcline; minor biotite, sericite, and albite

Name: Rosamond (*Rosamond Feldspar, Rosamond Feldspar and Silica, Townsend Feldspar and Silica, NW Sweetser*)

Location: *SW¼NW¼ Sec. 6, T.9N., R.12W., SBBM, Kern Co. (16,20,22,26)

Description: 75′ shaft to minor underground workings produced 2500 tons feldspar 1927–31; since 1947, the quartz has been used as an exposed aggregate for concrete facing slabs

Geology: quartz-feldspar pegmatite, 300′ by 150′, trends NW, dips 60–70°SW; footwall is a fault zone; pink orthoclase and faint brownish quartz occur in separate lenses

Location: *SE¼SE¼SE¼ Sec. 31, T.10N., R.5W., SBBM, San Bernardino Co. (1)

Description: short adit

Geology: alaskite pegmatite dike 30′ wide with large crystals of light bluish-gray, relatively pure, orthoclase; ratio of orthoclase to quartz is 3:1

OCCURRENCES

Location: N½ Sec. 13, T.8N., R.7W., SBBM, San Bernardino Co. (1)

Geology: numerous irregular outcrops of quartz-orthoclase pegmatite

Conclusions: shows little promise

Location: *NW¼NE¼SW¼ Sec. 32, T.10N., R.12W., SBBM, Kern Co. (1)

Geology: pegmatite dike in quartz monzonite

Location: *NE¼SW¼ Sec. 6, T.11N., R.8W., SBBM, Kern Co. (1)

Geology: alaskite pegmatite dike, 30′ wide and about 1500′ long with large crystals of light yellowish gray, relatively pure orthoclase; ratio of orthoclase to quartz is 3:1

FLUORITE [CaF_2]

MINES AND PROSPECTS

Name: Last Chance Canyon

Location: *Sec. 12, T.29S., R.38E., MDBM, Kern Co. (16)

Description: five lode claims, several pits

Geology: several fluorite veinlets in altered rhyolite; veinlets occur in vertical shear zone 8″ wide that strikes N55°W

GYPSUM AND GYPSITE [$CaSO_4 \cdot 2H_2O$]

MINES AND PROSPECTS

Name: Daly

Location: *SW¼SW¼NW¼ Sec. 8, T.30S., R.38E., MDBM, Kern Co. (6,16)

Description: mined by cuts

Geology: white gypsite beds on W edge Koehn Dry Lake

Name: A. D. Daly (*Mojave Desert Agricultural Gypsum*)

Location: *Sec. 28, T.30S., R.38E., MDBM, Kern Co. (6,16,27)

Description: produced over 200,000 tons of 60–70% gypsum from open pits and quarries; operated 1900–52

Geology: 3–9′ of white to tan gypsite over an area of one square mile

Name: Halsey

Location: *E½ Sec. 29, T.30S., R.38E., MDBM, Kern Co. (16)

Description: mined with scraper and harrow, 1953–56

Geology: gypsite 2′ thick averages about 60% $CaSO_4 \cdot 2H_2O$

LIMESTONE [$CaCO_3$]

MINES AND PROSPECTS

Location: *SE¼NW¼ Sec. 2, T.5N., R.4W., SBBM, San Bernardino Co. (1)

Description: shallow cuts

Geology: Oro Grande limestone

Name: Black Mountain and Reserve

Location: *Secs. 5, 6, 7, and 8, T.6N., R.2W., SBBM, San Bernardino Co. (1,2,12)

Description: Reserve quarry in Secs. 7 and 8 worked since 1942; much of the limestone contains more than 98% $CaCO_3$; Black Mountain quarry in Secs. 5 and 6 worked since 1948; in 1954, reserves of more than 300,000,000 tons above base level

Geology: Reserve quarry in white, coarsely crystalline limestone of the Oro Grande fm. locally intruded by dikes; Black Mtn. quarry in a limestone conglomerate member of Fairview Valley fm.

Location: Sec. 1, T.6N., R.3W., SBBM, San Bernardino Co. (1)

Description: many pits, trenches

Geology: limestone beds of Fairview Valley fm.; analyses range from 15.6–75% $CaCO_3$

Conclusions: shows limited promise

Name: White Lime Rock Company

Location: *SW¼NE¼NW¼ and SE¼NW¼NW¼ Sec. 25, T.6N., R.4W., SBBM, San Bernardino Co. (1,2,12)

Description: more than 100,000,000 tons produced 1949–54 mainly for roofing granules; selectively mined

Geology: Oro Grande limestone

Name: Victorville Lime Rock Company

Location: *SW¼ Sec. 25, E½NE¼ Sec. 35, and W½NW¼ Sec. 36, T.6N., R.4W., SBBM, San Bernardino Co. (1,2,12)

Description: large quarries operated from 1924; several million tons of high-grade (99% + $CaCO_3$) reserves in 1954

Geology: white, crystalline, Oro Grande limestone discontinuously exposed

Location: *SE¼ and SE¼SW¼ Sec. 6, T.9N., R.3W., SBBM, San Bernardino Co. (1)

Description: two small quarries and several adits

Geology: fairly pure limestone of Oro Grande fm. strikes N20°E, dips 80°NW; part of a narrow two-mile-long limestone outcrop

Location: *NW¼ Sec. 7, T.9N., R.3W., SBBM, San Bernardino Co. (1)

Description: shallow cuts

Geology: (See above listing)

OCCURRENCES

Location: SE¼ Sec. 35, T.6N., R.4W., SBBM, San Bernardino Co. (1)

Geology: white, coarsely crystalline Oro Grande limestone

Conclusions: shows limited promise

Location: W½NW¼NW¼ Sec. 5, T.9N., R.3W., SBBM, San Bernardino Co. (1)

Geology: a 50′ wide bed of limestone and a bed of dolomite strike NNW for about 1000′; a representative analysis is 86.49% $CaCO_3$, 1,15% $MgCO_3$, 10.58% SiO_2; 0.52% Fe_2O_3; 0.60% Al_2O_3; 0.06% P_2O_5; and 38.41% LOI

Conclusions: shows limited promise

Location: E½ Sec. 13, T.9N., R.4W., SBBM, San Bernardino Co. (1,2)

Geology: white, coarsely crystalline Oro Grande limestone; outcrop is 300′ wide and at least 3000′ long; contains dolomite interbeds; beds strike N40–50°E, dip 85°S to vertically; samples analysed 90.2–92.4% $CaCO_3$, 2.1–2.8% $MgCO_3$, 3.1–3.4% SiO_2, and 2.0% Fe_2O_3

Conclusions: warrants further investigation

Name: Hinkley Deposits

Location: *S½SW¼SW¼ Sec. 23, NW¼NW¼NW¼ Sec. 26, and NE¼NE¼ Sec. 27, T.10N., R.3W., SBBM, San Bernardino Co. (1,2)

Geology: more than 500,000 tons of white to grayish-white, crystalline limestone of Oro Grande fm. crops out in massive beds striking N70°W

Name: Bean Canyon

Location: *Secs. 5, 6, and 7, T.10N., R.14W., SBBM, Kern Co. (16)

Geology: gray and white banded limestone strikes N30°E, dips steeply NW; random sample analysed 93.5% $CaCO_3$ and 2.7% $MgCO_3$; contains siliceous pods and dolomite

MAGNESITE [$MgCO_3$]

MINES AND PROSPECTS

Name: Ball Kramer

Location: *SE¼SE¼SW¼ Sec. 11, T.9N., R.6W., SBBM, San Bernardino Co. (1)

Description: cut

Geology: magnesite-bearing beds interspersed throughout 50′ of Tropico lacustrine sediments, mostly dolomite with some clay and opaline chart

Name: Bissell

Location: *N½NE¼ Sec. 11, T.10N., R.11W., SBBM, Kern Co. (1,3,16,17,20,26)

Description: 15,757 tons produced to 1923 from pits, trenches, 100′ shaft, 550′ of drifts; reserves estimated at 100,000 tons

Geology: white magnesite beds, less than one foot thick, interbedded with dark, swelling bentonite to form a magnesite-rich unit up to 75′ thick in the Bissell fm. of Mio-Pliocene age; folded and faulted magnesite-bearing beds, which do not crop out, are exposed in cuts for 4200′; beds strike W, dip 20–60°S

MARL

MINES AND PROSPECTS

Name: Vitrlite

Location: *$E\frac{1}{2}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 8, T.8N., R.4W., SBBM, San Bernardino Co. (1,2)

Description: pit about 50′ deep operated during late 1920's and early 1930's produced 35–50 tons per day for use as soil conditioner; large reserves

Geology: marl and marly limestone, in beds 10–30′ thick, strike N70°W, dip 3–10°N

Location: *$S\frac{1}{2}S\frac{1}{2}SE\frac{1}{4}NW\frac{1}{4}$ Sec. 10, T.9N., R.2W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: limestone and marl bed in Plio-Pleistocene Yermo fm.

OCCURRENCES

Location: $SW\frac{1}{4}SW\frac{1}{4}$ Sec. 9, T.8N., R.4W., SBBM, San Bernardino Co. (1)

Geology: adjoins the Vitrlite deposits on the east; sample analysed 83.9% $CaCO_3$, 2.1% $MgCO_3$, 4.6% Fe_2O_3 and Al_2O_3

Conclusions: shows limited promise

Location: $W\frac{1}{2}NE\frac{1}{4}NE\frac{1}{4}$ Sec. 17, T.8N., R.4W., SBBM, San Bernardino Co. (1)

Geology: adjoins Vitrlite deposits on the south; analyses 85.2% and 73.7% $CaCO_3$, 11.6 and 16.6% SiO_2, 0.8–1.0% Fe_2O_3, and 2.4–5.0% Al_2O_3; contains sand and gravel interbeds

Conclusions: shows limited promise

MICA

The following deposits of exceedingly fine-grained mixtures of quartz and sericite are broadly classified under Mica, but in properties and uses are closely allied with clay and pyrophyllite. They have been used as a source of fillers, extenders, and in manufacture of asphalt tile.

MINES AND PROSPECTS

Name: Snow White

Location: *$NE\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$ Sec. 26, T.7N., R.3W., SBBM, San Bernardino Co. (2)

Description: cut 20–50′ wide and 100′ long; several thousand tons of material mined for white filler; 400 tons mined in 1949

Geology: rock similar to Marter-White deposit (see below) but contains more quartz; hydrothermally altered, irregular zone of sericite-quartz along an E-trending shear zone in altered Sidewinder metavolcanic rocks

Name: Marter-White (*Velvet White*)

Location: *W½SE¼ Sec. 27 and NW¼NE¼ Sec. 34, T.7N., R.4W., SBBM, San Bernardino Co. (2,25)

Description: main workings in Sec. 27, several quarries, largest is 80′ by 100′; annual production 4,000–5,000 tons per year

Geology: over 1,000,000 tons high-grade material under 1–6′ overburden; large discontinuous, white masses of sericite-quartz up to 1,000′ wide and three miles long in hydrothermally altered zones in metadacite and meta-andesite of the Sidewinder fm.

PERLITE

MINES AND PROSPECTS

Name: Grey Eagle Group

Location: *Sec. 32, T.28S., R.38E., and E½NW¼ Sec. 4 and Sec. 9, T.29S., R.38E., MDBM, Kern Co. (6,16,26)

Description: three lode and one placer claim

Geology: brecciated gray perlite up to 30′ thick in Pliocene Ricardo fm.

Name: Black Eagle Group

Location: *SE¼ Sec. 8, W½ Sec. 9, and NW¼ Sec. 17, T.29S., R.38E., MDBM, Kern Co. (6,16,26)

Description: 14 lode and three placer claims

Geology: (See above listing)

Location: *S½SE¼ Sec. 26, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Description: shallow cuts and pits

Geology: perlite and perlitic rhyolite

Location: N½NE¼NE¼ Sec. 35, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Description: about 9,000 tons of perlite exposed in cut 150′ by 60′ by 12′ deep

Geology: perlite in rhyolite

Conclusions: shows limited promise

Name: Hicks Perlite

Location: *W½W½ Sec. 36, T.31S., R.44E., MDBM, San Bernardino Co. (31)

Description: small tonnage mined for sample

Geology: perlite lenses of various sizes in rhyolite and tuffaceous sediments; highly brecciated

Location: *E½E½SE¼ Sec. 36, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Description: pit

Geology: perlite and perlitic rhyolite

Location: NW¼NW¼NW¼ Sec. 7, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: shallow shaft and pit in perlitic area 150′ long, 50′ wide

Geology: perlitic zone contains impurities of opaline rhyolite; texture is semi-perlitic; occurs in rhyolite

Conclusions: shows little promise

Location: N½NE¼SE¼ and S½S½NE¼ Sec. 7, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: shallow pits and shaft

Geology: two perlitic zones from 10–40′ thick in rhyolite

Conclusions: shows little promise

Location: *SE¼ Sec. 8, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: shallow pits

Geology: two perlitic zones from 10–40′ thick in rhyolite

Location: *SE¼SW¼NE¼ Sec. 18, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: stripped area 30′ long, 20′ wide

Geology: perlite associated with tuff

OCCURRENCES

Location: SE¼SE¼SE¼ Sec. 35, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Geology: perlite and perlitic rhyolite

Conclusions: shows limited promise

Location: *S½SW¼SW¼ Sec. 6, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Geology: extension of perlitic zone described above in NW¼NW¼NW¼ Sec. 7, T.32S., R.45E.

Location: NW¼SE¼NW¼ Sec. 9, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Geology: perlite lens 30′ long and 20′ wide near base of rhyolite flow

Conclusions: shows little promise

Location: W½SE¼ Sec. 5, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Geology: 10′ thick perlite lens at top of rhyolite

Conclusions: shows little promise

Location: SE¼SE¼ Sec. 7, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Geology: 10′ thick perlite lens in rhyolite

Conclusions: shows limited promise

Location: *S½SW¼SW¼ Sec. 8, T.32S., R.46E., MDBM, San Bernardino Co. (1)

Geology: 10′ thick perlite lens in rhyolite

PUMICE, PUMICITE, TUFF, AND VOLCANIC CINDERS

MINES AND PROSPECTS

Name: Black Mountain Group, Opal Extension and S. Opal (*New Joshua*)

Location: *S½S½SE¼ Sec. 32 (Black Mtn.) T.28S., R.38E., and NW¼NW¼NE¼ Sec. 4, (Opal), SW¼SW¼NE¼ Sec. 5, and Sec. 8, T.29S., R.38E., MDBM, Kern Co. (4,6,16)

Description: pits

Geology: pale tan to white pumice bed 3000′ by 600′ by 30′ thick strikes NE; Pliocene Ricardo fm.

Name: Calsilico

Location: *SE¼SE¼ Sec. 33, T.28S., R.38E., and NE¼NE¼ Sec. 4, T.29S., R.38E., MDBM, Kern Co. (4,6,16,26)

Description: at least 25,000 tons of ash produced from five cuts

Geology: white, fine-grained, compact, ash bed 20–30′ thick dips 20°W; contains some bentonite; Pliocene Ricardo fm.

Name: Queenie

Location: *NW¼NW¼NW¼ Sec. 24, T.29S., R.37E., MDBM, Kern Co. (6,16)

Description: several hundred tons produced for use as an abrasive cleanser

Geology: pale gray, fine-grained volcanic ash bed 4′ thick in Pliocene Ricardo fm. strikes NE, dips NW

Name: Cudahy

*Location:*SW¼SW¼ Sec. 5, and N½N½NW¼ Sec. 8, T.29S., R.38E., MDBM, Kern Co. (4,6,16,26)

Description: 120,000 tons mined by room-and-pillar method 1923–47 for abrasive cleanser

Geology: pumicite bed 9′ thick in Pliocene Ricardo fm.; dips 20°W

Name: Parrott and Allee Silica

Location: *Sec. 18, T.29S., R.38E., MDBM, Kern Co. (6,16)

Description: short adits, shallow pits; 50 tons shipped 1926

Geology: white ash bed 8′ thick strikes N30°E, dips 25°NW

Location: S½SE¼ Sec. 7 and N½NW¼ Sec. 17, T.32S., R.46E., MDBM, San Bernardino Co. (see photo, page 82) (1,4,31)

Description: about 20,000 tons of pumice mined in 1955 from open pit 200′ long and 40′ deep used for aggregate, plaster and mortar; worked since 1947

Pumice Pit in Secs. 7, 8, 17 and 18, T.32S., R.46E., MDBM, San Bernardino Co.

Geology: pumicite in two beds separated by 20′ of tuff breccia; lower bed 12′ thick, upper nearly 70′; strike NW, dip SW; pumice fragments range from $\frac{1}{8}$″ to $\frac{3}{4}$″ in white pumicite matrix

Conclusions: commerical source of pumice

Name: Williams Brothers

Location: *W$\frac{1}{2}$SW$\frac{1}{4}$ Sec. 8 and E$\frac{1}{2}$ Sec. 18, T.32S., R.46E., MDBM, San Bernardino Co. (1,4,31)

Description: (See above listing)

Geology: (See above listing)

Location: *NW$\frac{1}{4}$SE$\frac{1}{4}$NW$\frac{1}{4}$, NE$\frac{1}{4}$SW$\frac{1}{4}$SE$\frac{1}{4}$ and SE$\frac{1}{4}$SW$\frac{1}{4}$SE$\frac{1}{4}$ Sec. 2, and NW$\frac{1}{4}$NE$\frac{1}{4}$NE$\frac{1}{4}$ Sec. 11, T.9N., R.1W., SBBM, San Bernardino Co. (1,4,31)

Description: several adits and trenches, small amount of tuffaceous material used as an abrasive or filler

Geology: white rhyolite tuff member of the Miocene(?) Daggett fm.

Location: *SE$\frac{1}{4}$SW$\frac{1}{4}$SW$\frac{1}{4}$ Sec. 9, T.9N., R.2W., SBBM, San Bernardino Co. (1)

Description: shallow pit

Geology: tuff bed in Miocene Barstow fm.

Location: *N$\frac{1}{2}$SE$\frac{1}{4}$SE$\frac{1}{4}$ Sec. 6, T.11N., R.7W., SBBM, Kern Co. (1)

Description: quarry; cinders used locally

Geology: volcanic cinders in Mio-Pliocene Saddleback basalt

PYROPHYLLITE

MINES AND PROSPECTS

Name: Victorite

Location: *SW$\frac{1}{4}$NW$\frac{1}{4}$NE$\frac{1}{4}$ Sec. 25, T.7N., R.3W., SBBM, San Bernardino Co. (1,2,31,32)

Description: large quarry worked since 1950; reserves of several hundred thousand tons of variable grade material; pyrophyllite zone 200′ wide and 1500′ long exposed; material analyses 75.96% SiO_2, 18.93% Al_2O_3, 0.12% FeO, 0.23% CaO, 0.23% MgO

Geology: white, locally iron-stained pyrophyllite in a broad shear zone in hydrothermally altered metavolcanics

Name: Snow White

Location: *NE$\frac{1}{4}$SE$\frac{1}{4}$SW$\frac{1}{4}$ Sec. 26, T.7N., R.3W., SBBM, San Bernardino Co.

(See under INDUSTRIAL ROCKS AND MINERALS, Mica)

Name: Marter-White (*Velvet White*)

Location: *W$\frac{1}{2}$SE$\frac{1}{4}$ Sec. 27, T.7N., R.4W., SBBM, San Bernardino Co.

(See under INDUSTRIAL ROCKS AND MINERALS, Mica)

Quartz deposit on Southern Pacific's Sec. 5, T.1N., R.1W., SBBM, San Bernardino Co.

QUARTZ [SiO_2]

MINES AND PROSPECTS

Name: Rosamond

Location: *SW¼NW¼ Sec. 6, T.9N., R.12W., SBBM, Kern Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Feldspar)

Location: S½SE¼SW¼ and SW¼SE¼ Sec. 5, T. 11N., R.1W., SBBM, San Bernardino Co. (see photo on facing page) (1)

Description: quarry

Geology: prominent quartz vein 3–30′ wide, 25–30′ high and 2000′ long strikes N60°E, dips 70°N; minor iron and mangenese-oxide staining
Conclusions: warrants further investigation

OCCURRENCES

Location: SW¼NW¼NW¼ Sec. 17, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Geology: three quartz veins strike N60°E; one is 20′ high, 70′ long, 25′ wide; another is 15′ long, 6′ wide, 5′ high, and a third is 20′ long, 5′ wide; quartz is fractured and locally stained with iron and manganese-oxide minerals

Conclusions: shows limited promise

Location: *N½NW¼ Sec. 8, T.11N., R.1W., SBBM, San Bernardino Co. (1)

Geology: 2000′ extension of quartz vein described in Sec. 5 (see listing for Sec. 5, T.11N., R.1W., SBBM)

SALT [NaCl]

MINES AND PROSPECTS

Name: Long Beach Salt Co. (*California Salt Co., Fremont and Diamond Salt Cos.)*

Location: *Secs. 34, 35, and 36, T.29S., R.38E., and Secs. 1, 2, 3, 9, 10, 11, 14, 15, and 16, T.30S., R.38E., MDBM, Kern Co. (6,27,28)

Description: intermittent production of sodium chloride since 1914; idle in dry years; brine concentrated by solar evaporation

Geology: sodium chloride brine in Koehn Dry lake

SAND AND GRAVEL

MINES AND PROSPECTS

Location: *SE¼SE¼SE¼ Sec. 32, T.29S., R.38E., MDBM, Kern Co. (1)

Description: quarry; used for railroad ballast

Geology: Recent alluvium

Name: Triangle Rock Products, Inc. and Grossardt

Location: *N½ Sec. 9, T.29S., R.40E., MDBM, Kern Co. (16)

Description: operated since 1951; two pits, one is 700′ by 400′ by 15′ deep

Geology: alluvial fan

Location: S½ Sec. 9, T.29S., R.40E., MDBM, Kern Co. (1)

Description: pit in N½NW¼SW¼ produces about 500 tons per month

Geology: Recent alluvium

Conclusions: source of sand and gravel

Location: *SW¼NW¼SW¼ Sec. 28, T.32S., R.35E., MDBM, Kern Co. (1)

Description: quarry

Geology: alluvial fan

Location: *SE¼ and SE¼SE¼SW¼ Sec. 10 and NW¼NE¼NE¼ Sec. 15, T.9N., R.1W., SBBM, San Bernardino Co. (1)

Description: four pits

Geology: Plio-Pleistocene Yermo fm.

Location: *E½NW¼SW¼ Sec. 13, T.9N., R.1W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: Plio-Pleistocene Yermo fm.

Location: *NW¼NW¼NW¼ Sec. 17, T.9N., R.13W., SBBM, Kern Co. (1)

Description: pit 60′ long and 8′ deep

Geology: gravel in alluvium

Location: *N½SW¼ Sec. 30, T.10N., R.1W., SBBM, San Bernardino Co. (1)

Description: large borrow pits

Geology: alluvium and Plio-Pleistocene Yermo fm.

Location: *SE¼SE¼SE¼ Sec. 25, T.10N., R.2W., SBBM, San Bernardino Co. (1)

Description: large borrow pit

Geology: Plio-Pleistocene Yermo fm.

Location: *NW¼SE¼SW¼ Sec. 28, T.10N., R.2W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: Recent alluvium

Location: *S½ Sec. 9, T.10N., R.3W., SBBM, San Bernardino Co. (1)

Description: pit

Geology: alluvial fan

Location: *S½NW¼SW¼ Sec. 4, T.10N., R.12W., SBBM, Kern Co. (1)

Description: quarry

Geology: Recent alluvium

Location: *NW¼NW¼NW¼ Sec. 2, T.11N., R.12W., SBBM, Kern Co. (1)

Description: quarry

Geology: Recent alluvium

Location: *SE¼SW¼NW¼ Sec. 11, T.11N., R.12W., SBBM, Kern Co. (1)

Description: quarry

Geology: Recent alluvium

Location: *NW¼SW¼NW¼ Sec. 24, T.11N., R.12W., SBBM, Kern Co. (1)

Description: quarry

Geology: Recent alluvium

Location: SW¼SW¼SW¼ Sec. 35, T.12N., R.12W., SBBM, Kern Co. (1)

Description: quarry

Geology: Recent alluvium

Conclusions: shows little promise

OCCURRENCES

Location: NW¼ Sec. 35, T.6N., R.4W., SBBM, San Bernardino Co. (1)

Geology: older alluvial fan material

Conclusions: shows limited promise

SEMIPRECIOUS STONES

MINES AND PROSPECTS

Name: Roaring Ridge

Location: *E½ Sec. 13, T.29S., R.37E., and W½NW¼ Sec. 18, T.29S., R.38E., MDBM, Kern Co. (6,16)

Description: intermittent sniping produces opal for collectors from shafts and pits; 125′ shaft, inclined 10–15°NW

Geology: opal, agate, jasper, and petrified wood in red andesite flow breccia of Pliocene Ricardo fm.; some fine fire opals and various zeolites

Name: Red Rock Canyon

Location: *Secs. 26, 27, 34, and 35, T.29S., R.37E., MDBM, Kern Co. (1,16)

Description: pits

Geology: agate, jasper, and natrolite as veinlets and vug fillings in Pliocene volcanic rocks of Ricardo fm.; some petrified wood

Name: Last Chance Canyon

Location: *NW¼ T.29S., R.38E., MDBM, Kern Co. (16)

Description: pits

Geology: agate, apatite, calcite geodes, jasper, opal and zeolites as vesicle fillings and veins in Pliocene Ricardo fm. volcanic rocks with petrified wood

Location: *S½SE¼ Sec. 26, T.31S., R.44E., and N½NW¼SW¼ Sec. 31, T.31S., R.45E., MDBM, San Bernardino Co. (1)

Description: shallow pits

Geology: cherry and orange opal occurs in rhyolite

Location: N½NW¼NE¼ Sec. 35, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Description: pits

Geology: cherry opal occurs in Miocene rhyolite

Conclusions: shows little promise

Name: American Opal Co.

Location: *NE¼SW¼SE¼ Sec. 36, T.31S., R.44E., MDBM, San Bernardino Co. (1)

Description: 200′ shaft

Geology: vertical mineralized zone 15–30′ wide strikes N30°W; opal occurs as fissure fillings in tuff breccia

Location: *N½N½SW¼ Sec. 6, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: trenches 20–40′ long

Geology: "honey" opal in two parallel veins 20′ apart which strike N20°W, dip 65°W in conglomerate; vein widths from 3–18″

Location: *NW¼SW¼ Sec. 8, T.32S., R.45E., MDBM, San Bernardino Co. (1)

Description: pits

Geology: irregular silicification of rhyolite and tuff breccia to brownish gray and cream opal

Name: Boron Dry Lakes

Location: *Secs. 3, 4, and 14, T.11N., R.9W., MDBM, Kern Co. (16)

Description: pits

Geology: petrified wood and chalcedony in Quaternary lake beds and Pliocene basalt

STRONTIUM [Sr]

MINES AND PROSPECTS

Name: Solomon

Location: *Sec. 20, T.11N., R.1W., SBBM, San Bernardino Co. (1,8,31)

Description: about 500 tons shipped in 1917 from shallow pits; estimated reserves of 290,000 tons of strontianite-bearing rocks ranging from 59–87% $SrCO_3$, averaging about 73%

Geology: many strontianite lenses to 40′ long in Lower Barstow fm. of Miocene age

Name: Ross

Location: *N½NE¼ Sec. 30, T.11N., R.1W., SBBM, San Bernardino Co. (1,8,31)

Description: some production during World War II; estimated reserves of 140,000 tons of strontianite rock; average of four analyses is 53% $SrCO_3$

Geology: numerous lenticular beds of nodular strontianite distributed through 186′ section of green clay of the Miocene Barstow fm.

OCCURRENCES

Location: NW¼NW¼ Sec. 29, T.11N., R.1W., SBBM, San Bernardino Co. (1)

Geology: small exposure of low-grade strontianite rock adjacent to the Ross deposit (see above listing)

Conclusions: shows little promise

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PART III

Eastern Mojave and Colorado Deserts

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Water Resources By: M. S. Tischler, *Geologist*

PART III encompasses areas mapped by Southern Pacific within:
Townships 1–13 North, Ranges 1–24 East, SBBM.
Townships 1–13 South, Ranges 1–22 East, SBBM.
See Mineral Commodity Maps III and IV in map pocket.
See page 197 for *References.*

Kaiser Steel Corp's Eagle Mountain iron mine and beneficiating plant in T.3S., R.14E., SBBM, Riverside Co. The concentrated ore is shipped via Southern Pacific to the Kaiser steel mill at Fontana, and to Long Beach and Los Angeles Harbors for export to Japan. Facilities are being expanded and will include a pelletizing plant.

Metallics

The introductory paragraphs relating to deposits[1] of metallic mineral commodities in PART I (see page 11) are also pertinent here.

Of the metallic deposits on Southern Pacific lands listed in the PART III area, the following are considered most promising:

GOLD:

SE¼ Sec. 29, T.7N., R.8E., SBBM, San Bernardino Co.
SE¼ Sec. 33, T.7N., R.13E., SBBM, San Bernardino Co.
W½W½ Sec. 5, T.8N., R.14E., SBBM, San Bernardino Co.

IRON:

SE¼ Sec. 11, T.11N., R.6E., SBBM, San Bernardino Co.
NE¼ Sec. 17, T.2S., R.6E., SBBM, Riverside Co.
SW¼SE¼ Sec. 9, T.3S., R.6E., SBBM, Riverside Co.

SILVER:

NE¼ Sec. 19, T.11S., R.20E., SBBM, Imperial Co.

TUNGSTEN:

SW¼NE¼ Sec. 17, T.12N., R.1E., SBBM, San Bernardino Co.
S½NW¼, W½SW¼, SE¼SE¼SW¼ and SW¼SE¼ Sec. 17, T.12N., R.1E., SBBM, San Bernardino Co.

ANTIMONY [Sb]

MINES AND PROSPECTS

Location: *NE¼NE¼NE¼ Sec. 13, T.6N., R.17E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: minor stibnite and cinnabar in chalcedony within a 6′ wide vein striking N50°W, dipping 60°N in quartz monzonite

[1]Deposits at locations indicated by * are not owned by Southern Pacific.

COPPER [Cu]

MINES AND PROSPECTS

Name: Desert Butte

Location: *$S\frac{1}{2}S\frac{1}{2}$ Sec. 16, T.3N., R.16E., SBBM, San Bernardino Co. (1,6,9,24,38)

Description: 325′ adit to 45′ depth; small tonnage reported shipped in 1914

Geology: copper, gold, silver, lead, and zinc-bearing minerals in replacement zone in marble near contact with gneiss

Name: Vulcan (*McClintock*)

Location: *$SW\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$ Sec. 11, T.5N., R.15E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Lucky Jim

Location: *$SE\frac{1}{4}NW\frac{1}{4}$ Sec. 26(?), T.5N., R.18E., SBBM, San Bernardino Co. (1,12)

Description: 200′ shaft with over 300′ of drifts and adits to vein; $35,000 reportedly produced 1911–30; selected sample assayed 0.02 oz. Au, 8.5 oz. Ag, and 7.35% Cu

Geology: chalcopyrite, galena, cerrusite, argentite, and cerargyrite in quartz vein to 4′ wide that strikes NNW in gneissic granite

Name: Sinbad Group

Location: *$SE\frac{1}{4}NE\frac{1}{4}$ and $NW\frac{1}{4}SE\frac{1}{4}$ Sec. 24, T.6N., R.1E., and $W\frac{1}{2}$ Sec. 19, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: 20′ adit and many shallow pits

Geology: chalcopyrite, malachite, chrysocolla and specular hematite in copper-stained quartz veins 1–4′ wide in granite

Location: $E\frac{1}{2}$ Sec. 25, T.6N., R.1E., SBBM, San Bernardino Co. (1)

Description: several pits; selected samples assayed 0–0.01 oz. Au, 0.2–1.5 oz. Ag, and 0.6–1.3% Cu

Geology: chalcopyrite, chalcocite, chrysocolla, and malachite in 4–8″ wide quartz stringers that strike NE, dip 80°S in quartz monzonite

Conclusions: shows little promise

Location: *$S\frac{1}{2}$ Sec. 30, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: 1–2′ wide copper-stained quartz veins trend NE, dip steeply SE in quartz monzonite

Location: *$SE\frac{1}{4}NE\frac{1}{4}$ Sec. 32, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: copper and iron-stained shear zones to 10′ wide trend N and NW in granite

Name: Copper Strand (*Haney and Lee, Independence*)

Location: *$S\frac{1}{2}NE\frac{1}{4}$, $NW\frac{1}{4}NE\frac{1}{4}$, and $NW\frac{1}{4}$ Sec. 9, T.6N., R.3E., SBBM, San Bernardino Co. (1,9,38)

Description: intermittently operated 1900–40; 600′ adit to vein, 500′ incline, and two pits

Geology: chrysocolla, malachite, azurite, chalcopyrite and pyrite in veins along 300′ wide contact zone that strikes N40°W, dips 50°W between marble and quartz monzonite

Location: S½ Sec. 29, T.6N., R.3E., SBBM, San Bernardino Co. (1)

Description: pits; selected samples assayed 0.06–1.09% Cu, trace to 0.01 oz. Au, and 0.05–0.1 oz. Ag

Geology: chalcopyrite, malachite, specular hematite, and pyrite in N and NW-trending quartz veins 6–24″ wide in hornblende diorite

Conclusions: shows little promise

Location: *N½NE¼SE¼ Sec. 20, T.6N., R.14E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: azurite and malachite associated with quartz along fractures in diorite

Location: *SW¼SW¼NW¼ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: azurite and malachite associated with quartz along fractures in diorite

Location: *SW¼NW¼NE¼ Sec. 17, T.6N., R.18E., SBBM, San Bernardino Co. (1)

Description: 30′ adit and two pits

Geology: malachite stains in biotite schist and quartzite adjacent to a pegmatite

Name: Copper King

Location: *W½NE¼ and E½NW¼ Sec. 20, T.6N., R.18E., SBBM, San Bernardino Co. (1)

Description: shallow shaft and several pits

Geology: malachite in quartzite and biotite schist

Location: NE¼ Sec. 17, T.6N., R.23E., SBBM, San Bernardino Co. (1)

Description: shallow pits

Geology: minor chalcopyrite in small highly fractured copper-stained quartz veins a few inches to two feet wide that trend N in quartz diorite

Conclusions: shows little promise

Name: Greenback

Location: *NW¼SE¼(?) Sec. 12, T.7N., R.1E., SBBM, San Bernardino Co. (38)

Description: two shafts, 65′ and 80′ deep

Geology: copper carbonate and chrysocolla in N-trending quartz veins along fault in gneissic granite

Name: Gold Banner

Location: *SE¼SE¼ Sec. 12 and NE¼NE¼NE¼ Sec. 13, T.7N., R.1E., SBBM, San Bernardino Co. (9,28,38)

Description: 200′ adit and 40′ incline; several hundred tons concentrate shipped 1917; one carload shipped 1941

Geology: minor gold, chalcopyrite, bornite, malachite, and barite in 4–10′ wide quartz vein in gneissic granite

Name: Ord Mountain (*Ord, Osborn, Rio Vista*)

Location: *$E\frac{1}{2}E\frac{1}{2}$ Sec. 13 and $E\frac{1}{2}E\frac{1}{2}$ Sec. 24, T.7N., R.1E., SBBM, San Bernardino Co. (9,24,27,28,38)

Description: 28 claims, eight patented; over 1000 tons with reported average tenor of almost 2% Cu and 0.16 oz. Au mined 1942; 482 tons containing recoverable Pb and Ag reportedly produced 1929 and 1943; workings include 200′ incline on Brilliant claim, 500′ adit, 100′ shaft, and 30′ shaft on Josephine claim; 400′ adit with 200′ winze on Belgium claim; 200′ adit with 65′ crosscut on Copper Junction claim and three adits to vein on Rio Vista claim

Geology: discontinuous lodes containing bornite, chalcopyrite, pyrite, and gold with minor galena in series of 4–20′ wide veins that strike NW, dip NE along shear zone to 250′ wide and traceable for two miles in andesite

Name: Painsville

Location: *$NE\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$ Sec. 24, T.7N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *$NW\frac{1}{4}SE\frac{1}{4}$ Sec. 27, T.7N., R.2E., SBBM, San Bernardino Co. (1)

Description: pits and short adit

Geology: minor chalcopyrite and pyrite in N-trending quartz veins in quartz monzonite

Name: L and L

Location: *$N\frac{1}{2}$ Sec. 17, T.7N., R.3E., SBBM, San Bernardino Co. (27)

Description: two shafts, one 50′ deep, and 500′ adit to vein

Geology: auriferous and argentiferous malachite, azurite, bornite, and chalcopyrite in parallel quartz veins 1–2′ wide that strike NE, dip 50°SW in metavolcanic rocks

Location: $SW\frac{1}{4}$ Sec. 21, T.7N., R.8E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: small quartz veins containing iron oxide and minor copper minerals, trend NW in quartz monzonite porphyry

Conclusions: shows little promise

Location: $SE\frac{1}{4}$ Sec. 29, T.7N., R.8E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Home

Location: *Sec. 7, T.7N., R.11E., SBBM, San Bernardino Co. (38)

Description: 75′ shaft

Geology: copper oxides with minor gold in quartz veins in granite

Name: Hercules

Location: *E½ Sec. 8, T.7N., R.11E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Lady Lou

Location: *SW¼ Sec. 11, T.7N., R.11E., SBBM, San Bernardino Co. (38)

Description: adit and pit

Geology: copper minerals and gold in 4′ vein which strikes NE, dips NW in metamorphic rocks

Name: Orange Blossom and Orange Blossom Extension

Location: *SE¼SE¼ Sec. 13 and N½ Sec. 24, T.7N., R.11E., SBBM, San Bernardino Co. (6,38)

Description: active 1902, 1913; two shafts 600′ and 715′

Geology: copper carbonates and gold in 4–20′ wide quartz vein that strikes NE, dips 65–75°NW in metamorphic rocks

Location: *SE¼ Sec. 23, T.7N., R.11E., SBBM, San Bernardino Co. (1)

Description: incline and short adit

Geology: copper minerals and gold in quartz stringer to 6″ wide that strikes northerly and dips steeply W in metamorphic rocks

Location: SE¼ Sec. 33, T.7N., R.13E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *SE¼SE¼SW¼ Sec. 7, T.7N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: malachite, azurite, and chalcopyrite disseminated in 1′ wide vein in andesite

Location: *NW¼SW¼ Sec. 16, T.7N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: minor malachite and chalcopyrite in 3′ wide vertical vein that strikes N60°E in hydrothermally altered volcanic rocks

Location: E½SE¼NE¼ Sec. 5, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Description: pits; selected sample assayed 0.005 oz. Au, 0.1 oz. Ag, and 0.87% Cu

Geology: copper-stained quartz vein 18″ wide strikes N70°W, dips 75°S in gneiss

Conclusions: shows little promise

Location: *N½NW¼NE¼ Sec. 9, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Description: pits and several shafts to 50′ deep

Geology: irregular, discontinuous copper and iron-stained quartz veins and mineralized alteration zones in migmatite and gneiss

Name: Bumper Group

Location: *SE¼NE¼ Sec. 19(?), T.7N., R.23E., SBBM, San Bernardino Co. (1,6,9,24,38)

Description: 22′ shaft and 65′ drift; selected sample assayed a trace of Au, 0.2 oz. Ag, and 0.80% Cu

Geology: malachite, azurite, franklinite, and zincite reported in a mineralized shear zone 5–20′ wide that strikes ENE and dips 20–30°N in gneiss

Location: *W½NW¼ Sec. 31, T.7N., R.23E., SBBM, San Bernardino Co. (1)

Description: three pits

Geology: copper-stained quartz vein 1′ wide in gneiss

Name: Pine Ridge

Location: *SW¼SE¼ Sec. 6, T.8N., R.13E., SBBM, San Bernardino Co. (1)

Description: pits and 200′ adit with 50′ raise to surface

Geology: chalcopyrite, covellite, pyrite, sphalerite, and galena in 3–4′ wide sheared and silicified zone that strikes N50°W, dips 70°N in gneissic granite

Location: W½W½ Sec. 5, T.8N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Hidden Hill

Location: *E½ Sec. 6, T.8N., R.14E., and Sec. 31, T.9N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Big Four

Location: *S½SW¼ Sec. 13, T.8N., R.21E., SBBM, San Bernardino Co. (1)

Description: 180′ incline with 70′ drift, several adits to 60′ long and pits

Geology: copper-stained siliceous mylonite along a thrust fault between meta-igneous rocks and intrusive quartz latite

Location: *S½S½SE¼ Sec. 20 and N½NW¼NE¼ Sec. 29, T.8N., R.22E., SBBM, San Bernardino Co. (1)

Description: pits; selected sample assayed 0.375 oz. Au, a trace of Ag and 8.16% Cu

Geology: irregular, copper-stained quartz veins in zone that strikes N60°E for about ½ mile and dips 80°S in meta-igneous rocks

Location: *Sec. 23, T.9N., R.7E., SBBM, San Bernardino Co. (1)

Description: several pits and adits

Geology: secondary copper minerals with minor chalcopyrite in fault zone to 6″ wide which strikes N70°E, dips 25°N in quartz monzonite

Name: Bonner

Location: *Sec. 10, T.9N., R.8E., SBBM, San Bernardino Co. (1)

Description: two adits

Geology: secondary copper and iron-oxide minerals along NE-trending contact of quartz monzonite and metamorphic rocks

Name: Comanche

Location: *Sec. 26, T.9N., R.12E., SBBM, San Bernardino Co. (1)

Description: incline and adit; active 1957–59

Geology: chalcopyrite disseminated in silicified breccia zone 3–4′ wide which strikes NW near contact of granite and marble

Name: Lampis

Location: *S½NW¼ Sec. 16, T.9N., R.14E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: chalcopyrite, bornite, cuprite, and pyrite in quartz vein that strikes N70°W in syenite

Location: *NW¼NW¼NW¼ Sec. 17, T.9N., R.14E., SBBM, San Bernardino Co. (1)

Description: pits and two adits

Geology: minor chalcopyrite, pyrite, azurite, malachite, and limonite in quartz veins and stringers 1–12″ wide that strike N20–30°E, dip SE in syenite

Location: NE¼ Sec. 21, T.9N., R.14E., SBBM, San Bernardino Co. (1)

Description: pits; selected sample assayed a trace of Au, 0.4 oz. Ag and 2.83% Cu

Geology: tenorite and malachite disseminated along en echelon, hydrothermally altered zones 1–10′ wide striking NW in syenite and diorite

Conclusions: shows limited promise

Location: *SE¼SW¼NW¼ Sec. 5, T.9N., R.19E., SBBM, San Bernardino Co. (1)

Description: three pits; selected sample assayed a trace of Au, 3.2 oz. Ag, and 9.4% Cu; five tons reportedly shipped 1906

Geology: NE-striking quartz stringers 2–6″ wide in diorite gneiss

Location: *W½E½ Sec. 12, T.9N., R.20E., SBBM, San Bernardino Co. (1)

Description: 50′ adit and several pits

Geology: minor malachite in shear zones along contact between gneiss and granite

Name: Gold Butte

Location: *S½SW¼SW¼ Sec. 6, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: two 200′ shafts, numerous other shallow shafts and pits

Geology: chrysocolla, azurite, and quartz stringers in 1′ wide shear zone along 20′ wide vertical brecciated and altered zones that strike N15–75°E in gneiss

Location: *SE¼NE¼ Sec. 20, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: pits and several shafts to 50′ deep

Geology: two breccia zones containing stringers of quartz, barite, fluorite, and chrysocolla; one zone 4–5′ wide strikes N40°W, dips vertically; other zone 15–20′ wide strikes N50°E, dips vertically in mylonitized gneiss

Location: *SW¼SW¼ Sec. 24, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: 150′ incline and 150′ vertical shaft

Geology: chrysocolla, azurite, malachite, quartz, barite, and limonite erratically distributed in vein 6–24″ wide that strikes N65°E and dips 45°N in sheared gneiss and migmatite

Location: *NE¼NE¼NW¼ Sec. 25, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: stringers of chrysocolla, azurite, and limonite in 2–3′ wide quartz-fluorite-barite breccia zone that strikes N45°E and dips 80°SE in migmatite

Location: *S½SE¼NE¼ Sec. 28, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: two churn drill holes and several shallow trenches

Geology: stringers of chrysocolla and azurite in bleached red conglomerate and silicic welded tuff

Name: Josie K

Location: *SE¼SE¼SE¼(?) Sec. 19, T.9N., R.22E., SBBM, San Bernardino Co. (6,9,24,38)

Description: shallow workings for 4000′ along strike; active prior to 1919; reported to assay 14% Cu and 0.32 oz. Au

Geology: secondary copper minerals with gold in quartz vein in migmatite

Location: *SW¼NW¼SW¼ Sec. 21, T.9N., R.22E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 3–4′ vein strikes N17°W, dips 60°E along shear zone in migmatite

Name: Copper Gulch (*Big Butte, Copper Butte*)

Location: *SW¼SW¼SW¼(?) Sec. 28, T.9N., R.22E., SBBM, San Bernardino Co. (1,6,9,24,28,38)

Description: two shafts, 125′ and 600′ deep and two adits; active 1940; 3.5–8% Cu and 0.17–0.32 oz. Au reported

Geology: chrysocolla, azurite, malachite and gold in vertical vein 2–3′ wide that strikes NW in migmatite

Name: Rosalia

Location: *NW¼ Sec. 29(?), T.9N., R.22E., SBBM, San Bernardino Co. (6,9)

Description: reported assay of 0.49 oz. Au and 4% Cu from 60-ton dump sample

Geology: no data

Location: *NE¼SW¼NW¼ Sec. 29, T.9N., R.22E., SBBM, San Bernardino Co. (1)

Description: shaft

Geology: minor azurite and chrysocolla in NW-trending quartz vein in migmatite

Location: W½ Sec. 5, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit; composite chip sample assayed a trace of Au, 0.2 oz. Ag, and 0.176% Cu

Geology: minor pyrite, chalcopyrite, malachite, and azurite in vertical 2′ wide quartz vein that strikes E-W in quartz monzonite

Conclusions: shows little promise

Location: *NE¼NE¼NE¼ Sec. 8, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: minor chalcopyrite, malachite, azurite and limonite in 1′ wide quartz vein that strikes N60°W, dips 65°S in quartz monzonite

Location: NW¼NW¼NW¼ Sec. 9, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: 10′ adit

Geology: meager chalcopyrite, limonite, azurite and pyrite in 6″ quartz vein in 3′ wide vertical shear zone striking N60°W in quartz monzonite

Conclusions: shows little promise

Location: *N½S½SW¼ Sec. 11, T.10N., R.21E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: minor chrysocolla, azurite, malachite, fluorite, quartz and barite as fracture fillings in 3′ wide vertical breccia zones striking N in granite gneiss

Location: *S½SE¼ Sec. 25, T.10N., R.21E., SBBM, San Bernardino Co. (1)

Description: 30′ and 200′ shaft

Geology: azurite, chrysocolla and limonite in two parallel breccia zones, 1300′ apart, which strike N15°W, dip 30–60°E in granite gneiss

Location: N½ Sec. 33, T.11N., R.8E., SBBM, San Bernardino Co. (1)

Description: short adits; selected sample assayed 0.585% Cu, 0.005 oz. Au, and 0.2 oz. Ag

Geology: minor amounts of secondary copper minerals in 3′ wide siliceous, iron-stained zone which trends N in metamorphic rocks

Conclusions: shows little promise

Name: California (*Von Trigger, Hummingbird*)

Location: *SE¼ Sec. 10 and SW¼ Sec. 11, T.11N., R.17E., SBBM, San Bernardino Co. (1,15,28,38)

Description: active 1907–11, 1926–29, 1940, and 1944–45, during which time 5220 tons of crude ore were produced yielding 353 oz. Au, 3,686 oz. Ag, and 444,449 lbs. Cu; numerous pits, several adits, and inclines to depths of 300′ expose two lodes, one 20–100′ wide and 400′ long and another 20–250′ wide and over 600′ long

Geology: azurite, malachite, chalcopyrite and pyrite in and adjacent to alaskite and quartz-garnet dikes and veins, and in shears that strike N25–45°E, dip 55–85°W in granite to dioritic augen gneiss

Name: Leiser Ray

Location: *SW¼SW¼ Sec. 15, SE¼SE¼ Sec. 16, NE¼NE¼ Sec. 21, and NW¼NW¼ Sec. 22, T.11N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *SE¼SE¼SE¼ Sec. 9, T.11N., R.19E., SBBM, San Bernardino Co. (1)

Description: 25′ incline, two short adits and several pits

Geology: chalcopyrite with minor azurite and chrysocolla in limonitic boxworks containing quartz veins to 2′ wide that strike N30°E, dip 10°E in augen gneiss

Location: *Sec. 23, T.12N., R.5E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: secondary copper minerals with minor scheelite and iron oxides in fault zones 2–3′ wide which strike NNE in schist and marble

Location: *NE¼SE¼NW¼ Sec. 33, T.13N., R.19E., SBBM, San Bernardino Co. (1)

Description: pits and shallow trenches

Geology: azurite, chrysocolla, and limonite as coatings and blebs in quartz stringers that strike N80°E and dip 75°S in sericitized quartz monzonite

Location: *N½ Sec. 26, T.6S., R.16E., SBBM, Riverside Co. (1)

Description: pit

Geology: minor amounts of secondary copper minerals occur locally in small granite outcrop

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (1,2,36,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); daily yield calculated at 192 lbs. of copper based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: one-tenth of total Cu content of the brine crystallized as bornite, chalcopyrite, and chalcocite in 275′ horizontal discharge pipe at temperatures ranging from estimated 350°F at discharge end of pipe to a measured 482°F at well-head end; complex chloride brine flows from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

Location: *Secs. 23 and 26, T.12S., R.20E., SBBM, Imperial Co. (21)

Description: pits

Geology: copper oxide and copper carbonate along shear zones in schist and fractures in monzonite

OCCURRENCES

Location: NW¼NW¼NW¼ and SW¼NW¼SW¼ Sec. 33, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Geology: 1–10′ wide gossan zones in granite; selected samples assayed 0.05 oz. Ag and 0.044–0.25% Cu

Conclusions: shows little promise

Location: SW¼NE¼ and SW¼NW¼ Sec. 1, T.7N., R.4E., SBBM, San Bernardino Co. (1)

Geology: malachite, chalcanthite and chrysocolla in fractured conglomerate

Conclusions: shows little promise

Location: *N½NE¼SE¼ Sec. 13, T.9N., R.13E., SBBM, San Bernardino Co. (1)

Geology: minor chalcopyrite, bornite, azurite, malachite, limonite, and pyrite disseminated in 2–3′ wide shear zone that strikes E-W and dips 80°N

Location: SW¼ Sec. 13 and NE¼ Sec. 25, T.10N., R.8E., SBBM, San Bernardino Co. (1)

Geology: copper minerals in quartz lenses 2–3′ wide and to 100′ long in metamorphic and intrusive rocks; selected samples assayed a trace of Au, 0.2–0.3 oz. Ag, and 1.18% Cu

Conclusions: shows little promise

GOLD [Au]

MINES AND PROSPECTS

Name: Stewart (*Jackass*)

Location: *Sec. 16, T.2N., R.3E., SBBM, San Bernardino Co. (38)

Description: 150′ adit

Geology: gold-bearing alaskite dikes and contact zone between mica schist and granite

Name: Rose and Monte Cristo (*Christie*)

Location: *NE¼SE¼NE¼ Sec. 19 and NW¼NW¼SW¼ Sec. 20, T.2N., R.3E., SBBM, San Bernardino Co. (1,9,24,38)

Description: two 450′ shafts and several thousand feet of workings; $450,000–600,000 reported production, largely 1895–1903

Geology: gold, silver, and minor copper with much hematite in 20′ wide quartz-calcite zone that strikes N20°W for about 2000′ and dips E in limestone

Name: Sunnyside (*Livingstone, Morongo King*)

Location: *NW¼SE¼NW¼ Sec. 27, T.2N., R.3E., SBBM, San Bernardino Co. (9,38)

Description: several shafts, trenches and pits

Geology: gold, pyrite, and minor scheelite in quartz vein, 800′ long and 6–8′ wide along quartz monzonite contact with limestone; two scheelite-bearing, 6–10′ wide tactite bodies in granite nearby

Name: Holliday

Location: *SW¼(?) Sec. 29, T.2N., R.3E., SBBM, San Bernardino Co. (38)

Description: trench, 20′ long by 15′ deep

Geology: gold and tungsten-bearing zone in calcareous schist

Name: Hollie Ann

Location: *SW¼ Sec. 29, T.2N., R.3E., SBBM, San Bernardino Co. (38)

Description: 80′ shaft and pit

Geology: gold and tungsten-bearing quartz veins strike N in contorted quartz-biotite schist near granite contact

Name: Log Cabin

Location: *Secs. 29 and 30, T.2N., R.3E., SBBM, San Bernardino Co. (38)

Description: trenches

Geology: gold and scheelite in narrow tactite zone between mica schist and granite

Location: *N½SW¼NE¼ Sec. 12, T.3N., R.13E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 15′ wide iron-stained quartz vein in granite

Location: N½ and NE¼SE¼ Sec. 9, T.3N., R.16E., SBBM, San Bernardino Co. (1)

Description: pits and two inclines to 30′ deep; selected sample assayed 0.005 oz. Au and 0.4 oz. Ag

Geology: 200′ long by 15′ wide xenolith of quartz-mica schist and quartzite trends N70°E, dips 60°N in diorite

Conclusions: shows little promise

Location: *SW¼SE¼SW¼ Sec. 16, T.3N., R.16E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: iron sulfides along a copper-stained zone 10′ wide and 80′ long that trends NE, dips 12°NW in marble near contact with foliated granitic rocks

Name: Calumet (*Calmont, Acme*)

Location: *NW¼NW¼ Sec. 19, T.4N., R.14E., SBBM, San Bernardino Co. (1,25)

Description: 200′ shaft reported average tenor of 0.73 oz. Au

Geology: two parallel 30″ wide iron-stained quartz veins strike E-W, dip 70°N in granite

Location: NE¼SW¼SW¼ Sec. 9, T.4N., R.17E., SBBM, San Bernardino Co. (1)

Description: pit; selected sample assayed 0.060 oz. Au and 1.2 oz. Ag

Geology: iron-stained quartz vein along a NW-trending shear zone in gneiss

Conclusions: shows little promise

Name: Silver Gate (*Hooper*)

Location: *E½NE¼NE¼ Sec. 20 and W½NW¼ Sec. 21, T.4N., R.17E., SBBM, San Bernardino Co. (1)

Description: shallow shafts and pits; two or three carloads reported shipped prior to 1922

Geology: minor gold, silver, and copper in several quartz veins 6–24″ wide that strike NE, dip 70°E in granite

Location: N½NE¼NW¼ Sec. 1, T.5N., R.2E., SBBM, San Bernardino Co. (1)

Description: pit; selected sample assayed 0.02 oz. Au, 0.10 oz. Ag, and 0.04% Cu

Geology: hematite, pyrite, chalcopyrite and gold in 1′ wide iron-stained quartz veins in 4′ wide shear zone in granite

Conclusions: shows little promise

Location: W½SE¼ Sec. 5, T.5N., R.4E., SBBM, San Bernardino Co. (1)

Description: pit; selected sample assayed 0.05 oz. Au and trace of Ag

Geology: pyrite and arsenopyrite in 10′ wide iron-stained zone that strikes NE, dips 60°SE in quartzite and gneiss

Conclusions: shows little promise

Name: Vulcan (*McClintock*)

Location: *SW¼SE¼SW¼ Sec. 11, T.5N., R.15E., SBBM, San Bernardino Co. (1,9,28,38)

Description: sporadically active since 1898; principal activity 1935–37 and 1941–42; produced nearly $80,000 with reported average tenor of about 1.14 oz. Au; 800 tons ore shipped in 1942 reportedly averaged 0.345 oz. Au, 0.12 oz. Ag, and 0.21% Cu; developed by two shafts, 500′ deep and 175′ deep with most development on 50′, 100′, 150′, and 175′ levels; veins explored for length of 435′; stoped to surface

Geology: gold and copper minerals in two parallel veins, one 8–12′ wide and one 6–12′ wide, striking N10°E and dipping 80°E along contacts between limestone and quartz diorite

Location: *N½NW¼NE¼ Sec. 21, T.5N., R.15E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: quartz and secondary copper minerals in NW-trending contact zone to 4′ wide and 200′ long between limestone and granite

Location: *NW¼SW¼NW¼ Sec. 22, T.5N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: iron sulfides in 4′ wide quartz vein that strikes N85°W, dips 30°N in granite

Name: Gemco

Location: *N½N½(?) Sec. 10, T.5N., R.17E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Lucky Jim

Location: *SE¼NW¼ Sec. 26(?) T.5N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Hoover

Location: *NW¼SE¼SW¼ Sec. 10, T.6N., R.2E., SBBM, San Bernardino Co. (27,38)

Description: 50′ shaft and 90′ adit with 120′ drift

Geology: quartz veins 6–24″ wide in and along a rhyolite dike that strikes N30°W, dips 70°N in metamorphic rocks

Name: Ford

Location: *SW¼ Sec. 10, T.6N., R.2E., SBBM, San Bernardino Co. (27)

Description: several shafts to 40′ deep

Geology: series of parallel quartz veins 6–24″ wide, strike N30°E, dip 65°W in quartz monzonite

Name: Grandview

Location: *SW¼SE¼ Sec. 10, T.6N., R.2E., SBBM, San Bernardino Co. (24,27,38)

Description: 3000–5000 tons with tenor of 0.44 oz. Au reported mined from pits and 150′ incline

Geology: gold reported in parallel quartz veins, 8–15′ wide and to 3000′ long that strike N30°E, dip 65°W in brecciated rhyolite and andesite porphyry

Name: Ord Belt

Location: *S½N½ Sec. 10, T.6N., R.2E., SBBM, San Bernardino Co. (27,38)

Description: six adits 75–500′ long

Geology: auriferous pyrite in quartz veins to 5′ wide that strike N and NE in dacite and along contact of rhyolite with monzonite

Location: SW¼NW¼NE¼ Sec. 25, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: shallow shaft; selected sample assayed a trace of Au, 0.2 oz. Ag and 0.04% Cu

Geology: quartz vein along ENE-trending shear zone in hornblende diorite

Conclusions: shows little promise

Name: Cumberland (*High Hope*)

Location: *SW¼SE¼ Sec. 25 and NW¼NE¼ Sec. 36, T.6N., R.2E., SBBM, San Bernardino Co. (27,28,38)

Description: active 1939 and 1956; six shafts 50–135' deep; pits and two deep shafts in Section 36

Geology: gold with copper and iron sulfides in 18–36″ wide quartz vein that strikes N, dips 85°W in quartz monzonite and hornblende diorite

Location: *NE¼ Sec. 26, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: three pits

Geology: 2′ wide iron-stained shear zone trends NNE in granite

Name: Olony Lode

Location: *S½N½SE¼ Sec. 35, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: 6″ iron-stained quartz vein in hornblende diorite

Location: *SE¼SE¼ Sec. 36, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: numerous pits and shafts

Geology: iron-stained shear zones and quartz veins in hornblende diorite and granite

Name: Johnson

Location: *S½SW¼ Sec. 36, T.6N., R.2E., SBBM, San Bernardino Co. (24,38)

Description: 400′ adit to vein and 500′ of drifts

Geology: gold and iron sulfides in quartz vein 1–4′ wide along shear zone in hornblende diorite

Name: Vulture

Location: *S½SW¼NE¼ Sec. 36, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: two shafts, three pits and adit

Geology: NE-trending shear zone and quartz veins in hornblende diorite

Name: F. D. Roosevelt

Location: *NW¼SE¼ Sec. 36, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: shaft and pit

Geology: NE-trending shear zone and quartz vein in hornblende diorite

Name: Elsie

Location: *E½SE¼NW¼ Sec. 36, T.6N., R.2E., SBBM, San Bernardino Co. (27,38)

Description: two shafts, 250′ and 150′ deep; active early 1900's, 1935, and 1940; tenor of 1.22 oz. Au reported

Geology: gold, pyrite, arsenopyrite and copper carbonates in quartz vein 1–2′ wide that strikes N15°E, dips 85°W along andesite dike in granite and hornblende diorite

Name: Red Hills

Location: *SE¼SW¼ Sec. 7 and N½NE¼NW¼ Sec. 18, T.6N., R.3E., SBBM, San Bernardino Co. (27,38)

Description: two shallow shafts and 200′ adit

Geology: gold in vuggy quartz vein along rhyolite dike in quartz monzonite

Name: Gold Peak

Location: *W½ Sec. 31, T.6N., R.3E., SBBM, San Bernardino Co. (9,27,38)

Description: reported production of over $40,000 prior to 1914 from 120′ shaft with levels at 50′ and 100′

Geology: gold and pyrite in four parallel vertical quartz veins 2–4′ wide that strike N in quartz monzonite

Name: Bullion Range

Location: *Sec. 12, T.6N., R.7E., SBBM, San Bernardino Co. (27)

Description: 120′ incline with drift and 100′ winze

Geology: gold in 12′ wide quartz-filled breccia zone which strikes N25°W, dips 65°E along fault with rhyolite hanging wall and intrusive andesite porphyry footwall

Location: *E½ Sec. 5, T.6N., R.8E., SBBM, San Bernardino Co. (1)

Description: numerous pits, shallow shafts and adits

Geology: gold and secondary copper minerals in breccia zones which trend NW, dip E in andesite porphyry

Name: Markeson

Location: *Sec. 7, T.6N., R.8E., SBBM, San Bernardino Co. (27)

Description: several hundred tons reportedly produced from pits and incline to 110′ depth

Geology: gold-bearing breccia zone 4–6′ wide strikes E, dips 40°N between rhyolite and intrusive andesite porphyry

Name: Bagdad-Chase

Location: *Secs. 7 and 8, T.6N., R.8E., SBBM, San Bernardino Co. (27,38)

Description: developed by three shafts to 400′ depth; total production 1904–39 reported at $6,013,000 in gold from about 270,000 tons

Geology: gold and secondary copper minerals, mainly chrysocolla, in fault breccia zone 8–20′ wide, which strikes NW and dips 25–30°N between intrusive porphyry footwall and rhyolite hanging wall

Location: *NW¼NW¼ Sec. 9, T.6N., R.8E., SBBM, San Bernardino Co. (1)

Description: shallow shaft, adit and pits

Geology: barite with minor malachite and chrysocolla in fault breccia which strikes N15°W, dips 50°W in andesite porphyry

Name: Dull Pick

Location: *Sec. 18, T.6N., R.8E., SBBM, San Bernardino Co. (27,38)

Description: several hundred tons reported produced from two inclines on zone to 180′ depth

Geology: gold-bearing, iron-stained breccia zone 4′ wide strikes E, dips 35°N between intrusive andesite porphyry and dacite

Name: Billie Boy

Location: *claim in NW¼NW¼ Sec. 5, T.6N., R.10E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: gold in quartz stringers in 16–48″ wide zone that trends NE in quartz monzonite

Name: Wheel of Fortune

Location: *SE¼SE¼ Sec. 13, T.6N., R.16E., SBBM, San Bernardino Co. (1)

Description: shaft

Geology: brecciated iron-stained 18–24″ wide quartz vein strikes N45–65°W in granodiorite gneiss

Name: Blue Eagle (*Florence, Enterprise*?)

Location: *Sec. 19, T.6N., R.17E., SBBM, San Bernardino Co. (38)

Description: active 1935–39; 160′ shaft, 50′ shaft and pit

Geology: gold associated with pyrite, arsenopyrite, galena and sphalerite in three parallel veins about 200′ apart that dip steeply E in granite

Name: Long Shot

Location: *SE¼ Sec. 30 and NW¼ Sec. 32, T.6N., R.17E., SBBM, San Bernardino Co. (9,38)

Description: active 1940–42; 70′ shaft, 300′ adit to vein; 1 oz. Au reported

Geology: auriferous pyrite and chalcopyrite in 1–4′ wide quartz vein in granite that dips steeply and crops out for 6000′

Name: Black Hills

Location: *N½NW¼SW¼ Sec. 11, T.6N., R.18E., SBBM, San Bernardino Co. (1)

Description: two pits

Geology: gold and malachite in 6″ stringer that strikes N in basalt

Name: Gold Banner

Location: *$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 12 and $NE\frac{1}{4}NE\frac{1}{4}NE\frac{1}{4}$ Sec. 13, T.7N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Ord Mountain

Location: *$E\frac{1}{2}E\frac{1}{2}$ Sec. 13 and $E\frac{1}{2}E\frac{1}{2}$ Sec. 24, T.7N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Painsville

Location: *$NE\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$ Sec. 24, T.7N., R.1E., SBBM, San Bernardino Co. (9,24,27,38)

Description: 90′ shaft and pit

Geology: gold and copper minerals in two quartz veins in metamorphosed andesite; Rio Vista vein 6–10′ wide strikes N20°W, dips 75°E and is joined by other 15′ wide vein that strikes N20°E

Name: Gold Belt

Location: *$W\frac{1}{2}W\frac{1}{2}SW\frac{1}{4}$ Sec. 30, T.7N., R.1E., SBBM, San Bernardino Co. (1,9,24,27,28,38)

Description: adits, pits, and 275′ shaft with over 1000′ of drifts on 50′, 100′, and 240′ levels; active 1930–32

Geology: gold, pyrite, and chalcopyrite in 2–7′ wide quartz-calcite vein that strikes N40–50°E and dips about 45°SE along shear zones in hornblende diorite

Location: *$NE\frac{1}{4}$ Sec. 34, T.7N., R.2E., SBBM, San Bernardino Co. (1)

Description: shallow pits

Geology: pyrite and gold(?) in WNW-trending quartz vein in metamorphosed andesite

Name: L & L

Location: *$N\frac{1}{2}$ Sec. 17, T.7N., R.3E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Old Pete (*Yim-Wheelock*)

Location: *$SW\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$ Sec. 28, and $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 33, T.7N., R.8E., SBBM, San Bernardino Co. (28,38)

Description: $25,000–30,000 reported produced prior to 1943 from adits, cuts and pits; 0.81 oz. Au reported

Geology: gold with minor copper minerals in 30–50′ wide by 600′ long breccia zone that strikes northerly and dips 30°E in dacite and andesite

Location: $SE\frac{1}{4}$ Sec. 29, T.7N., R.8E., SBBM, San Bernardino Co. (1)

Description: shallow shafts, adits, pits; channel samples of 4–5′ wide zone assayed 0.03–0.12 oz. Au, 0.1–0.2 oz. Ag, and 0.28–0.93% Cu; selected sample assayed 0.005 oz. Au, 0.10 oz. Ag, and 2.46% Cu

Geology: copper and iron-stained siliceous breccia zones in andesite and dacite porphyry

Conclusions: warrants additional exploration

Name: Gold Standard

Location: *Sec. 32, T.7N., R.8E., SBBM, San Bernardino Co. (38)

Description: active 1935–38; three shafts to 110′ depth

Geology: gold associated with iron, copper, and manganese minerals in fracture zone which strikes NE, dips NW in rhyolite

Location: NW¼NW¼ Sec. 33, T.7N., R.8E., SBBM, San Bernardino Co. (1)

Description: pits and inclines; selected samples assayed 0.01–0.08 oz. Au, 0.10–0.45 oz. Ag, and 0.012–0.16% Cu

Geology: copper and iron-stained siliceous breccia zones to 6′ wide in andesite and dacite porphyry

Conclusions: shows limited promise

Name: Hercules

Location: *E½ Sec. 8, T.7N., R.11E., SBBM, San Bernardino Co. (1)

Description: 1400 tons with tenor of 0.29–0.39 oz. Au reportedly shipped prior to 1919 from pits and 42′ shaft

Geology: gold-bearing copper oxides and carbonates in NW-trending shear zone in gneiss and schist

Location: *SE¼ Sec. 23, T.7N., R.11E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Rainbow Lode

Location: *NE¼SE¼ Sec. 25, T.7N., R.11E., SBBM, San Bernardino Co. (1)

Description: shallow shafts and pits

Geology: gold-bearing quartz-calcite stringers and lenses along NE-trending fault zone in granite

Name: Sunrise

Location: *Sec. 18, T.7N., R.12E., SBBM, San Bernardino Co. (1)

Description: shallow shaft, adit, and pits

Geology: gold and copper minerals in NE-trending quartz vein

Location: SE¼ Sec. 33, T.7N., R.13E., SBBM, San Bernardino Co. (1,9,24,38)

Description: several inclines, 200′ shaft, 50′ shaft, numerous pits and trenches; selected samples assayed 0.11–0.99 oz. Au, 0.3–2.0 oz. Ag, and 0.101–4.00% Cu

Geology: gold and silver associated with chalcopyrite, bornite, pyrite, and malachite in vein which does not crop out but apparently strikes N60°W, dips 45°SW, in granite (SE¼SE¼ of section); similar mineralization in quartz veins to 2′ wide that trend NNE and NE in shear zones in granite (W½SE¼ of section)

Conclusions: warrants further exploration

Name: Castle

Location: *W½SE¼ Sec. 34, T.7N., R.13E., SBBM, San Bernardino Co. (1,9,24,38)

Description: two 275′ shafts, numerous surface workings

Geology: NE-trending vein in diorite

Location: *$S\frac{1}{2}SE\frac{1}{4}$ Sec. 12, T.7N., R.14E., SBBM, San Bernardino Co. (1)

Description: two shafts, adit, and six pits

Geology: chalcopyrite, malachite, azurite, pyrite, and possibly minor amounts of gold and silver in quartz veins along fractures that strike N60°W and dip steeply NE in andesitic rocks

Name: Gold Reef Group (*Clipper Mountain, Tom Reed, Gold Reef*)

Location: *$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 14 and $N\frac{1}{2}$ Sec. 15, T.7N., R.15E., SBBM, San Bernardino Co. (1,23,24,28,38)

Description: 300′ shaft at Clipper Mountain, 500′ shaft at Tom Reed, and several pits and adits

Geology: gold in quartz-calcite vein a few inches to 50′ wide strikes N60°W for about $1\frac{1}{2}$ miles along hydrothermally altered fault zone in volcanic rocks; strong parallel veins dip 60°SW

Location: *$SE\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$ Sec. 22, T.7N., R.15E., SBBM, San Bernardino Co. (1)

Description: shaft

Geology: pyrite disseminated in 3′ NW-trending quartz vein in andesite

Location: *$SE\frac{1}{4}$ Sec. 11, T.7N., R.20E., SBBM. San Bernardino Co. (1)

Description: +100′ shaft

Geology: quartz veins and stringers in 10′ wide pyritized zone that strikes N10°W, dips 55°E in gneiss

Location: $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 5, T.7N., R.21E., SBBM, San Bernardino Co. (1)

Description: pit; selected sample assayed 0.015 oz. Au and no Ag

Geology: small, irregular quartz vein to 3′ wide, strikes N in augen gneiss

Conclusions: shows little promise

Location: *$SE\frac{1}{4}SW\frac{1}{4}$ Sec. 7, T.7N., R.21E., SBBM, San Bernardino Co. (1)

Description: three shallow shafts

Geology: irregular quartz vein with minor copper staining strikes N35°W, dips variably in gneiss

Location: $NW\frac{1}{4}NE\frac{1}{4}$ and $NW\frac{1}{4}$ Sec. 9, T.7N., R.21E., SBBM, San Bernardino Co. (1)

Description: 54′ incline and pits; selected samples assayed 0.085–0.180 oz. Au, a trace to 0.2 oz. Ag, and no Pb

Geology: quartz-calcite veins and stringers strikes ENE in augen gneiss

Conclusions: shows little promise

Name: Devine

Location: *$NE\frac{1}{4}$ Sec. 18, T.7N., R.21E., SBBM, San Bernardino Co. (1)

Description: 300′ shaft

Geology: quartz vein 1–2′ wide strikes N, dips 65°E in gneiss

Name: Cherokee

Location: *SW¼NW¼ Sec. 3, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Description: several shafts

Geology: several hydrothermally altered zones with minor sulfide mineralization in migmatite and gneiss

Location: *N½SE¼ Sec. 4, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Description: several pits

Geology: hydrothermally altered zones with some quartz and copper staining and minor specular hematite in injection gneiss and migmatite

Location: SE¼SW¼ Sec. 9, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Description: 30′ shaft and small pit; selected samples assayed 0.43–0.56 oz. Au, and 0.3–0.4 oz. Ag

Geology: vertically dipping quartz lens, 25′ long and 8′ wide, trends N in meta-igneous rocks

Conclusions: shows limited promise

Location: *N½SW¼ Sec. 36, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Description: shallow incline

Geology: quartz lens strikes N30°W, dips 40°SW, and pinches out 10′ below surface in gneiss

Location: SE¼ Sec. 9, T.8N., R.1E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: gold with minor copper-staining in small vertical quartz vein that strikes N70°W in granite

Conclusions: shows limited promise

Name: Azucar

Location: *NE¼NW¼NW¼ Sec. 19, T.8N., R.2E., SBBM, San Bernardino Co. (1,38)

Description: 200′ shaft, 135′ incline with 120′ of drifts, adit, and trenches

Geology: quartz vein in monzonite and granite

Location: W½W½ Sec. 5, T.8N., R.14E., SBBM, San Bernardino Co. (1)

Description: incline at least 200′ deep, short adit, and pits; two selected samples assayed 1.415–1.905 oz. Au, 1.4–1.8 oz. Ag, and 1.61–1.67% Cu

Geology: gold and silver-bearing iron sulfides and copper minerals in NE-trending quartz veins that dip NW in altered andesite

Conclusions: warrants further exploration

Name: Hidden Hill

Location: *E½ Sec. 6, T.8N., R.14E., and Sec. 31, T.9N., R.14E., SBBM, San Bernardino Co. (1,38)

Description: intermittently active 1882–1907, 1915, 1950's; $19,000 production reported from Sec. 6; incline at least 150′ deep, two adits 50′ and 100′ long in SE¼SE¼

Sec. 6, 200′ adit in NE¼SE¼ Sec. 6; inclines, drifts, and 200′ adit to vein in W½SE¼ Sec. 6, and pits in Sec. 31; chip sample across 4′ quartz vein in Sec. 31 assayed 0.34 oz. Au, 0.5 oz. Ag, and 1.66% Cu; selected sample from lower adit in SE¼SE¼ Sec. 6, assayed 0.125 oz. Au and 1.5 oz. Ag

Geology: gold, silver and copper minerals in NE-trending quartz veins in andesitic lavas in Sec. 6 and in N-trending quartz veins to 4′ wide in quartz monzonite in Sec. 31; hydrothermally altered zone about 100′ wide in Sec. 31 contains limonite with minor amounts of pyrite, turquoise, azurite, and malachite

Name: Gold Hammer

Location: *SW¼NW¼ Sec. 12, T.8N., R.15E., SBBM, San Bernardino Co. (1)

Description: shaft and pits

Geology: chalcopyrite and bornite in quartz vein 3′ wide that strikes N25°W, dips 30°N in gneiss and schist

Location: NW¼ Sec. 13, T.8N., R.15E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *S½ Sec. 30, N½ Sec. 31, and NW¼ Sec. 32, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Description: numerous adits, inclines, and pits

Geology: auriferous pyritized veins in gneiss and schist

Name: Dutch Oven

Location: *SW¼SW¼ Sec. 31, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Description: two cuts, six adits, and several shallow shafts

Geology: auriferous pyrite in veins and lenses along a fault that strikes N30°E in gneiss and schist

Location: *N½N½NE¼ Sec. 1, T.8N., R.18E., SBBM, San Bernardino Co. (1)

Description: 20′ adit and several shallow pits

Geology: 2–3′ wide E-trending, iron-stained quartz vein in augen gneiss

Location: *NE¼NW¼NE¼ Sec. 14, T.8N., R.18E., SBBM, San Bernardino Co. (1)

Description: 30′ shaft and several pits

Geology: minor iron-stained and silicified bands in 200–300′ wide NW-trending shear zone in augen gneiss

Location: *NE¼SE¼ Sec. 1, T.8N., R.21E., SBBM, San Bernardino Co. (1)

Description: 40′ shaft

Geology: pyrite with minor copper staining in quartz lens 4′ wide and 40′ long that strikes N, dips 85°E

Location: NW¼ and SE¼SW¼SE¼ Sec. 33, T.8N., R.21E., SBBM, San Bernardino Co. (1)

Description: 30′ incline and three pits; selected samples assayed 0.01–0.19 oz. Au and 0–0.2 oz. Ag

Geology: iron-stained 24–42″ wide quartz veins strike N30°E and dip 33–45°E in augen gneiss

Conclusions: shows little promise

Location: *$E\frac{1}{2}E\frac{1}{2}SW\frac{1}{4}$ and $NW\frac{1}{4}NE\frac{1}{4}SE\frac{1}{4}$ Sec. 18, T.8N., R.22E., SBBM, San Bernardino Co. (1)

Description: pit and 40′ shaft

Geology: E and N-trending copper and iron-stained quartz veins in gneiss

Location: *$S\frac{1}{2}S\frac{1}{2}SE\frac{1}{4}$ Sec. 20 and $N\frac{1}{2}NW\frac{1}{4}NE\frac{1}{4}$ Sec. 29, T.8N., R.22E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Coarse Gold

Location: *$E\frac{1}{2}NE\frac{1}{4}$ Sec. 20 and $W\frac{1}{2}W\frac{1}{2}$ Sec. 21, T.9N., R.14E., SBBM, San Bernardino Co. (1,28,38)

Description: two inclines 50 and 75′ deep and numerous pits; 0.74 oz. Au reported

Geology: pyrite and malachite with gold and silver in parallel quartz veins that strike N20–50°E, dip 60–70°SE in hydrothermally altered zone in syenite and meta-igneous rocks

Name: Big Horn (*Contention, Investment, Mabel, Mable*)

Location: *$SW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$ Sec. 20 and $NW\frac{1}{4}$ and $E\frac{1}{2}NE\frac{1}{4}$ Sec. 29, T.9N., R.14E., SBBM, San Bernardino Co. (1,6,9,24,28,38)

Description: about $100,000 of 2.5 oz. gold ore reported produced, largely 1918–19; 325′ shaft with two levels and 550′ of drifts in $SW\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$ Sec. 29; 140′ incline in Sec. 20

Geology: pyrite, chalcopyrite, and bornite in quartz veins a few inches up to four feet wide that strike N35°E, dip steeply W along lamprophyre dike located on NE-trending hydrothermally altered fracture zone in syenite; quartz and fluorite pods to 2′ wide and 3′ long in 2′ wide veins that strike N80°E in syenite

Location: *$NW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$ Sec. 3, T.9N., R.15E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: minor malachite and pyrite in 6″ wide vein that strikes N80°E for 50′ in gneiss and schist

Location: *$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 14, T.9N., R.17E., SBBM, San Bernardino Co. (1)

Description: 75′ shaft and pit

Geology: several discontinuous quartz stringers to 4″ wide strike NW in quartz monzonite

Location: *$SE\frac{1}{4}$ Sec. 15, T.9N., R.17E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 3′ wide copper-stained quartz vein strikes NW in quartz monzonite

Name: Ware

Location: *N½NE¼NW¼ Sec. 24, T.9N., R.18E., SBBM, San Bernardino Co. (1)

Description: 80′ incline; selected sample reportedly assayed 1.14 oz. Au

Geology: quartz lenses and stringers strike E-W in augen gneiss

Name: Turtle Dove(?)

Location: *S½NW¼NW¼ Sec. 24, T.9N., R.18E., SBBM, San Bernardino Co. (1)

Description: two inclines, 100′ and 25′ deep, and a 60′ adit

Geology: 1′ wide iron-stained shear zone strikes N80°E in gneiss

Location: *S½SE¼SE¼ Sec. 25, T.9N., R.18E., SBBM, San Bernardino Co. (1)

Description: adit and pit

Geology: gold in iron-stained quartz stringers in augen gneiss

Name: Louisa (*Chausse*)

Location: *S½NW¼ and N½SW¼ Sec. 25, T.9N., R.18E., SBBM, San Bernardino Co. (1)

Description: active 1907; 100 tons reported mined from 100′ and 300′ shafts, and 120′ incline

Geology: veins trend NE in augen gneiss

Name: Gold Ridge (*Ibex*)

Location: *SW¼NE¼ and W½SE¼ Sec. 13, T.9N., R.20E., SBBM, San Bernardino Co. (1,38)

Description: 70′ shaft and many pits; 0.12–0.48 oz. Au and 0.60–1.60 oz. Ag reported

Geology: gold in copper-stained quartz stringers to 6″ wide that strikes ENE in rhyodacite flows and tuff

Location: *S½SW¼ Sec. 18, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: several shafts to 250′ deep, numerous cuts and pits

Geology: minor pyrite in quartz veins to 5′ wide in two zones in gneiss; one zone 100′ wide strikes N20–80°E and dips 30–60°N, and other zone strikes N70°E and dips NW

Name: Josie K

Location: *SE¼SE¼SE¼(?) Sec. 19, T.9N., R.22E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Copper Gulch (*Big Butte, Copper Butte*)

Location: *SW¼SW¼SW¼(?) Sec. 28, T.9N., R.22E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Rosalie

Location: *NW¼ Sec. 29(?), T.9N., R.22E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Burcham (*Total Wreck*)

Location: *N½NE¼ Sec. 21, T.10N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *SW¼ Sec. 11, T.10N., R.5E., SBBM, San Bernardino Co. (1)

Description: 115′ incline and 100′ adit

Geology: brecciated quartz vein 6–36″ wide in shear zone strikes N50°E, dips 38°N in granitic rocks

Name: Overlook

Location: *Sec. 16, T.10N., R.5E., SBBM, San Bernardino Co. (1)

Description: short adits and pits

Geology: minor galena and malachite in auriferous quartz lenses and stringers along shear zone that strikes NW and dips NE in granitic rocks

Location: *Sec. 23, T.10N., R.9E., SBBM, San Bernardino Co. (1)

Description: 150′ shaft

Geology: gold and traces of secondary copper minerals in 3′ wide quartz vein which strikes N10°W, dips W in metamorphic rocks

Location: *SE¼ Sec. 8, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: 100′ incline shaft

Geology: minor iron sulfides, oxides, and carbonates in 3–6″ quartz stringer along shear zone that strikes N40°W, dips 40°E in diorite and quartz monzonite

Location: NW¼SW¼ Sec. 17, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: minor pyrite, limonite, and calcite in 6″ quartz stringer that strikes N5°W

Conclusions: shows little promise

Name: Silver Dutchess

Location: *NE¼SE¼SE¼ Sec. 18, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: trench and pit

Geology: minor pyrite, limonite, and gypsum in 6–12″ quartz vein in vertical N15°W shear zone in quartz monzonite

Location: *E½ Sec. 2, T.10N., R.17E., SBBM, San Bernardino Co. (1)

Description: 45′ incline and several pits

Geology: minor iron and copper staining along a few 1–2′ wide discontinuous NE-trending quartz veins in gneiss

Name: Copper Chief

Location: *E½SE¼ Sec. 36, T.10N., R.18E., SBBM, San Bernardino Co. (1,9,38)

Description: 80′ adit; active 1930

Geology: copper-stained quartz vein in diorite gneiss

Name: Minnie Gold, Gold Turtle, Desert Gold Group

Location: *E½SE¼NE¼ Sec. 33, T.10N., R.20E., SBBM, San Bernardino Co. (1)

Description: $470 in gold reportedly produced from several shallow shafts to 40′ deep and many pits

Geology: azurite, malachite, chrysocolla, rare chalcocite, and minor gold and silver in a brecciated zone striking N15°E in granitic mylonite

Location: *SW¼SW¼ Sec. 15, T.11N., R.1E., SBBM, San Bernardino Co. (1)

Description: pits and two shafts

Geology: minor pyrite and limonite in 200′ wide NE-trending shear zone in quartzite

Location: SW¼NE¼, SE¼NW¼ and NE¼SW¼ Sec. 17, T.11N., R.1E., SBBM, San Bernardino Co. (1)

Description: pit; selected sample assayed 0.2 oz. Au and 0.1 oz. Ag

Geology: arsenopyrite in 2′ wide quartz vein which strikes N20°E for 400′ in metamorphic rocks

Conclusions: shows little promise

Name: Midnight

Location: *NW¼NW¼ Sec. 28, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Description: two 50′ shafts and pit

Geology: minor auriferous pyrite in two parallel iron-stained vuggy quartz veins 6–12″ wide that strike NNW, dip 35–45°W in diorite

Location: SW¼NE¼ and NW¼SE¼ Sec. 33, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Description: short adit and several pits; selected samples assayed 0.01–0.03 oz. Au, 0.1–0.3 oz. Ag, 0.15–0.45% Cu, and 0.4–0.7% Pb

Geology: pyrite and minor chalcopyrite in quartz veins 12–18″ wide that strike N, dip 5–10°W in quartz diorite

Conclusions: shows little promise

Name: Alvord

Location: *S½SW¼ Sec. 1, S½SE¼ Sec. 2, and N½NW¼ Sec. 12, T.11N., R.3E., SBBM, San Bernardino Co. (1,9,24,27,28,38)

Description: active 1885–91, 1906–10, 1916–20, 1950–52; over $50,000 produced 1885–91; glory hole 150′ in diameter and two adits 500′ and 550′ long

Geology: pyrite, limonite and gold in a siliceous vein in WNW-trending belt of marble

Location: *S½ Sec. 35, T.11N., R.5E., SBBM, San Bernardino Co. (1)

Description: incline

Geology: minor chalcopyrite in quartz stringer less than 1′ wide that strikes N and dips 60°W in granitic rocks

Location: *SE¼ Sec. 15, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Description: adit to vein with short drift, 50′ adit, and pits

Geology: gold, copper carbonates and iron oxides in siliceous fault breccias that strike NE and dip steeply N in metamorphic rocks; marble hanging wall contains magnetite and hematite veins and stringers to 1′ wide

Location: *S½NW¼ Sec. 21, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Description: pits and 60′ adit

Geology: copper minerals in small quartz veins in metamorphic rock

Name: Crater (*Mitchell, Denver, Getchell*)

Location: *S½SW¼ and SE¼ Sec. 7, SW¼SW¼ Sec. 8, and W½NE¼ and NW¼ Sec. 18, T.11N., R.17E., SBBM, San Bernardino Co. (1,15,38)

Description: active 1930–31, 1938–39, and 1941; several pits, adits and shafts to 80′ depth

Geology: gold and pyrite in irregularly faulted quartz stringers along NE-striking fault in rhyolite flow breccia

Name: California (*Von Trigger, Hummingbird*)

Location: *SE¼ Sec. 10 and SW¼ Sec. 11, T.11N., R.17E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Leiser Ray

Location: *SW¼SW¼ Sec. 15, SE¼SE¼ Sec. 16, NE¼NE¼ Sec. 21, and NW¼NW¼ Sec. 22, T.11N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: NW¼NW¼ Sec. 9 (NW¼ Tract 39), T.11N., R.19E., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Location: *NW¼NE¼NE¼ Sec. 13, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: shallow incline and pits

Geology: 3′ quartz vein strikes S65°W, dips 70°S in diorite

Location: *SE¼SW¼SE¼ Sec. 13, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: shallow shafts and pits

Geology: quartz veins 6–30″ wide strike NE and NW in granodiorite

Location: W½NW¼NW¼ Sec. 15, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: adit

Geology: minor limonite in quartz vein that strikes NE in quartzite and schist

Conclusions: shows little promise

Location: *E½NW¼ Sec. 18, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: 100′ adit

Geology: limonite in vertical shear zone that strikes N80–85°E in quartzite

Location: *E½SW¼ Sec. 18, T.12N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *SW¼NW¼NE¼ Sec. 23, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: 100′ incline and several pits

Geology: pyrite in 6–20″ iron-stained quartz vein that strikes N10°E, dips 60°W along fault zone in diorite and granodiorite

Location: *NW¼NW¼NE¼ Sec. 23, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: pits and shafts

Geology: iron-stained quartz veins about 18″ wide strike N10–40°E, dip 30–50°W in diorite

Name: Daisy

Location: *S½SE¼NE¼ Sec. 24, T.12N., R.1E., SBBM, San Bernardino Co. (1,38)

Description: about 200′ of workings, mainly short adits along vein

Geology: iron-stained vuggy quartz vein 5′ wide in shear zone that strikes N30°E to N15°W, dips 10–25°E in granodiorite

Name: Olympus (*Paradise*)

Location: *NE¼NW¼NE¼ Sec. 24, T.12N., R.1E., SBBM, San Bernardino Co. (1,24,38)

Description: operated 1915–25, 1935–41 from incline 400′ deep; 50,000 tons of $6 ore reported mined from the lowest level

Geology: iron and manganese oxides in parallel 1–20′ wide vuggy quartz veins that strike N30°W, dip 33°E in granodiorite

Location: *S½ Sec. 24, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: pyrite in N-trending quartz veins along shear zones in granodiorite

Location: *SW¼ Sec. 29, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: three shafts, one 250′ deep, and several pits

Geology: gold and pyrite with minor chalcopyrite in two 6–24″ wide quartz veins along 2–4′ wide shear zones that strike N65–70°E, dip 60–70°S in diorite

Location: *W½W½ Sec. 28, T.12N., R.3E., SBBM, San Bernardino Co. (1)

Description: several adits, shallow shafts, and pits

Geology: E-W-trending quartz veins and shear zones in hornblende-biotite schist

Name: Roseberry

Location: *E½ Sec. 28, T.12N., R.3E., SBBM, San Bernardino Co. (1)

Description: several adits and pits

Geology: quartz veins to 15″ wide along faults in quartz diorite

Location: *S½SE¼ Sec. 20, T.12N., R.6E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: gold? with minor secondary copper minerals in silicified shear zone; magnetite stringers to 6″ wide nearby

Location: *E½NE¼ Sec. 25, T.12N., R.17E., and S½ Sec. 19 and Sec. 30, T.12N., R.18E., SBBM, San Bernardino Co. (1)

Description: seven shafts and numerous pits

Geology: gold-copper? mineralization associated with alaskite dikes along nearly vertical shear zones that generally strike NW in granite gneiss

Name: Scando (*Hercules*)

Location: *Sec. 26(?), T.12N., R.17E., SBBM, San Bernardino Co. (1,38)

Description: two inclines

Geology: quartz vein in gneiss

Location: NE¼ Sec. 33, T.12N., R.17E., SBBM, San Bernardino Co. (1,15,38)

Description: at least seven shafts to 125′ deep with several hundred feet of drifts; reportedly yielded $40,000 in gold in early 1890's and seven tons of gold ore in 1936

Geology: gold, chalcopyrite, malachite, and azurite in narrow quartz veins in steeply dipping shear zones that trend NW in gneiss

Conclusions: shows limited promise

Name: Mountain Flat (*Golden West*)

Location: *SE¼NW¼SW¼ and NE¼SW¼SW¼ Sec. 25 and E½NE¼ Sec. 35, T.12N., R.20E., SBBM, San Bernardino Co. (1,28,38)

Description: several pits and two shafts, 30′ and 50′ deep

Geology: copper minerals disseminated in vuggy, iron-stained quartz veins 3–5′ wide that strike NW and dip steeply NE and SW in augen gneiss

Location: NW¼ Sec. 5, T.2S., R.4E., SBBM, Riverside Co. (1)

Description: short adits and trenches; some core drilling reported; selected samples assayed to 0.40 oz. Au

Geology: mineralized shear zone in gneiss

Conclusions: shows little promise

Name: Snow Cloud

Location: *N½ Sec. 6, T.5S., R.10E., SBBM, Riverside Co. (1)

Description: shallow workings

Geology: auriferous(?) pyrite and minor amounts of copper minerals in quartz vein striking N40°E in gneiss near contact with quartz monzonite

Location: NE¼NE¼ Sec. 21, T.5S., R.11E., SBBM, Riverside Co. (1)

Description: 25′ and 50′ incline shafts

Geology: quartz vein 3′ wide strikes N80°W, dips 50°S along contact between gneiss and quartz diorite; vein outcrop is 200′ long

Conclusions: shows limited promise

Name: Gold Basin (*Silver Queen*)

Location: *W½ Sec. 2, T.12S., R.20E., SBBM, Imperial Co. (21)

Description: shafts to 100′ deep, 75′ adit

Geology: several quartz veins 12–18″ wide strike NE, dip 60–70°SE in diorite and greenstone

OCCURRENCES

Location: SW¼ Sec. 1, T.3N., R.13E., SBBM, San Bernardino Co. (1)

Geology: swarm of discontinuous copper-stained quartz veins trend E-W in granite; selected samples assayed a trace Au, 0.1–0.2 oz. Ag, and 0.138% Cu

Conclusions: shows little promise

Location: *Sec. 6, T.5N., R.3E., SBBM, San Bernardino Co. (1)

Geology: pyrite and minor gold in quartz veins in hornblende diorite

Location: S½ Sec. 17, T.5N., R.5E., SBBM, San Bernardino Co. (1)

Geology: several quartz veins in quartz monzonite; largest vein is vertical, 8′ wide, strikes N70°W for 100′ in an alaskite dike; selected sample assayed 0.01 oz. Au and 0.05 oz. Ag

Conclusions: shows little promise

Location: E½ Sec. 21, T.5N., R.5E., SBBM, San Bernardino Co. (1)

Geology: quartz stockwork in a number of aplite or alaskite dikes to 500′ long and 50′ wide; en echelon dike zone to 600′ wide containing quartz veins to 3′ wide strikes N10°E for about 2700′; samples selected at 370′ intervals assayed a trace Au and 0–0.2 oz. Ag

Conclusions: shows little promise

Location: NW¼SE¼ Sec. 25, T.7N., R.17E., SBBM, San Bernardino Co. (1)

Geology: N-trending veins to 5′ wide containing pyritized and silicified material in gneiss; selected sample assayed a trace Au and 0.1 oz. Ag

Conclusions: shows little promise

Location: NE¼ Sec. 5, T.7N., R.18E., SBBM, San Bernardino Co. (1)

Geology: 20′ wide pyritized and silicified zone strikes NE in gneiss; selected sample assayed a trace Au and 0.1 oz. Ag

Conclusions: shows little promise

Location: NE¼SE¼SE¼ Sec. 33, T.8N., R.21E., SBBM, San Bernardino Co. (1)

Geology: three quartz lenses to 2′ wide and 30′ long in augen gneiss; selected sample assayed 0.015 oz. Au and no Ag

Conclusions: shows little promise

IRON [Fe]

Some of the magnetite-ilmenite deposits listed may be useful as heavy aggregate, radiation shields, or other uses for material of high specific gravity. None is a potential source of iron ore, considering metallurgical techniques as of 1963. Advances in these techniques may make these deposits valuable as a source of titanium as well as iron.

MINES AND PROSPECTS

Name: New Bessemer (*Alarm*)

Location: *Sec. 1, T.5N., R.4E., and Sec. 36, T.6N., R.4E., SBBM, San Bernardino Co. (38)

Description: 4000 short tons reported produced in 1949

Geology: magnetite-hematite replacement of marble near contact with quartz monzonite

Location: Sec. 5, T.5N., R.4E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: L-shaped area in NW¼ of section about 1800′ long and 200–400′ wide contains pebbles, cobbles, and few boulders of magnetite imbedded in gravel and caliche to depth of 2′ in pit

Conclusions: shows little promise

Name: Morris Lode (*Van Buren Group*)

Location: *Sec. 12, T.5N., R.4E., and Sec. 7, T.5N., R.5E., SBBM, San Bernardino Co. (38)

Description: 17,500 short tons reportedly produced for heavy aggregate 1949–50 from pits and 55′ shaft; magnetic anomaly tested in 1944–45 by nine drill holes 150–955′ deep; eight holes penetrated indicated thickness of magnetite from 87–921′ and averaged 37.32% Fe within these limits

Geology: magnetite with small amounts of pyrite, hematite and limonite replacement of dolomitic marble near contact with granitic rocks

Name: Ship Mountain

Location: *E½ Sec. 11, T.5N., R.15E., SBBM, San Bernardino Co. (1,17,24,28,38)

Description: 365′ incline with six levels, 15 pits and trenches; 30 carloads reported to average 60% Fe shipped 1918–20

Geology: brecciated hematite with minor magnetite in discontinuous lenses 2–3′ wide and to 300′ long strike N and dip 35°E along ¾ mile breccia zone in igneous and metamorphic rocks

Location: *NW¼NW¼NW¼ Sec. 12, T.5N., R.15E., SBBM, San Bernardino Co. (1)

Description: several pits

Geology: cobbles and boulders of hematite and magnetite in fanglomerate

Name: Ebony

Location: *SW¼ Sec. 15, T.6N., R.4E., SBBM, San Bernardino Co. (17)

Description: five pits

Geology: estimated 100,000 short tons of 40–50% Fe per 100′ of depth reported in magnetite-hematite replacement deposit at contact of dolomitic marble and granitic rock

Name: Bessemer

Location: *Secs. 27 and 28, T.6N., R.4E., SBBM, San Bernardino Co. (17,38)

Description: 2000 short tons produced 1945 and 26,000 tons 1951 from cuts; prospected by pits, trenches and shallow shafts; 14 separate lenses reported to contain an estimated 1,800,000 short tons ranging from 30–65% Fe; larger outcrops 2500–50,000 sq. ft.

Geology: coarsely crystalline magnetite with minor hematite and limonite in granitic rock and along contact of dolomitic marble and granitic rock

Location: N½ Sec. 17, T.6N., R.12E., SBBM, San Bernardino Co. (1)

Description: several thousand tons exposed in pit 150′ by 100′ by 20′ deep; estimated 1000 long tons of magnetite-hematite clasts in material removed from pit; representative sample of clasts assayed 60% Fe, 0.12% Ti, 0.316% S, and 0.017% P

Geology: magnetite and hematite replacement lenses strike generally N45°W in marble near contact with syenite

Conclusions: small reserve of magnetite-hematite

Name: Black Jack

Location: *N½ Sec. 30, T.6N., R.13E., SBBM, San Bernardino Co. (1,38)

Description: pits and trenches; 55% Fe, 0.10% S, and 0.003% P reported in selected sample

Geology: six irregular lenses of thinly banded magnetite in marble near contact with syenite

Name: Iron Hat

Location: *W½W½ Sec. 17, SE¼SE¼ Sec. 18, NE¼NE¼ Sec. 19, N½N½ Sec. 20 and NW¼NW¼ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co. (1,17,24,28,38)

Description: 2000 long tons produced from adits, cuts, and trenches

Geology: lenses of magnetite and hematite replace marble near contacts with granite and meta-igneous rocks

Name: Columbia-Geneva

Location: *NW¼ Sec. 19, T.6N., R.14E., SBBM, San Bernardino Co. (1)

Description: at least five diamond drill holes tested magnetic anomaly

Geology: fan and wash gravels

Location: W½SW¼SW¼ Sec. 5, T.7N., R.2E., SBBM, San Bernardino Co. (1)

Description: pit; estimated 2000 long tons of magnetite

Geology: magnetite lenses in marble inclusions to 400′ long by 200′ wide in quartz monzonite; minor copper mineralization reported

Conclusions: shows limited promise

Location: *SW¼SE¼NE¼ Sec. 12, T.7N., R.17E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: magnetite in bands to 1′ wide in a 200′ long zone in epidotized gneiss and schist

Location: SW¼NE¼NE¼ Sec. 33, T.8N., R.3E., SBBM, San Bernardino Co. (1)

Description: pits; selected samples assayed 45.0% Fe, a trace of Au, 0.05 oz. Ag, and no WO_3

Geology: magnetite and hematite in vein, about 10′ wide that crops out about 60′ along NE-trending fault that dips SE between marble and quartz monzonite; nearby parallel shear zones carry minor tungsten, gold, and thorium

Conclusions: shows little promise

Name: Iron Victory

Location: *Sec. 2, T.8N., R.12E., SBBM, San Bernardino Co. (38)

Description: pits; 37.5–59.2% Fe reported

Geology: hematite and magnetite crop out in area 350′ long and 50–100′ wide at contact of metamorphic and granitic rocks

Location: *NE¼SW¼SW¼ Sec. 30, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Description: about three tons of magnetite on a dump near 15′ pit

Geology: magnetite as irregular body in 5′ wide shear zone in gneiss

Location: *Sec. 9, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: hematite and magnetite(?) forms knoll 250′ by 150′ by 20′ high near center of section; in NE¼SE¼ of section, a vertical vein of iron-oxide minerals to 15′ wide strikes NE in gneissic granite

Name: Cave Canyon (*Basin, Baxter*)

Location: SE¼ Sec. 11, T.11N., R.6E., SBBM, San Bernardino Co. (1,17)

Description: small pit, and 20 percussion drill holes 15–90′ deep explore an area of 45,000 sq. ft.; 11 holes penetrated magnetite and hematite estimated to contain 82,500 long tons averaging +50% Fe; magnetometer survey and incomplete drilling inferred reserves of 166,600 long tons within a 100,000 sq. ft. area

Geology: magnetite, hematite, and minor limonite bedding-replacement deposits to at least 30′ thick in anticlinally folded marble, quartzite, and gneiss; deposits along a low-angle shear zone which strikes NE and dips NW

Conclusions: warrants further exploration

Name: Cave Canyon

Location: *Sec. 12, T.11N., R.6E., SBBM, San Bernardino Co. (1,17,38)

Description: mined intermittently from cuts, adits, and shafts since 1930; about 50,000 tons mined and stockpiled for use in low-heat portland cement in 1952; largest cut 800′ long, to 200′ wide, and with faces 30–70′ high

Geology: magnetite and hematite with some limonite in steeply inclined, lenticular deposits in gneiss, quartzite, and marble; associated with fault zone trending N70°E

Name: Cave Mountain (*Arrowhead, Meir*)

Location: *SE¼ Sec. 20, T.12N., R.6E., SBBM, San Bernardino Co. (1,28)

Description: six carloads of hematite assaying 60–64% Fe reportedly shipped from pits and shafts in 1943

Geology: hematite lenses along NE and NW-trending faults in quartzite, gneiss and schist; largest hematite outcrop is about 400′ long by 80′ wide

Name: Meir Group

Location: *Secs. 28 and 32, T.12N., R.6E., SBBM, San Bernardino Co. (1)

Description: trenches

Geology: 1–6′ wide hematite veins in metamorphic rocks near contact with granite

Location: E½ Sec. 29, T.12N., R.6E., SBBM, San Bernardino Co. (1)

Description: 30′ adit and trenches

Geology: hematite stringers in migmatite

Conclusions: shows little promise

Name: Cronese

Location: W½NW¼ Sec. 33, T.12N., R.6E., SBBM, San Bernardino Co. (1)

Description: estimated 700 long tons mined from trenches and pits; estimated reserves of 180 tons of +50% Fe per foot of depth; selected sample assayed 63.98% Fe, 0.12% TiO_2, 0.64% P, and 0.007% S

Geology: magnetite and hematite with traces of copper-oxide minerals as tabular and lenticular replacement deposits along fault which strikes N25°E, dips about 60°W in biotite diorite; largest deposit about 80′ long and 10′ wide

Conclusions: small reserve of magnetite and hematite

Location: *S½ Sec. 14, T.11S., R.20E., SBBM, Imperial Co. (1)

Description: pits

Geology: small outcrop of hematite

OCCURRENCES

Location: *NW¼NE¼NW¼ Sec. 20, T.3N., R.14E., SBBM, San Bernardino Co. (1)

Geology: 1′ wide magnetite vein strikes N in hornblende-biotite gneiss near contact with granite

Location: SE¼ Sec. 29, T.6N., R.5E., SBBM, San Bernardino Co. (1)

Geology: vein of specular hematite to 2′ wide and at least 200′ long strikes NNW, dips 45°W in quartz monzonite

Conclusions: shows little promise

Location: E½ Sec. 9, T.6N., R.22E., SBBM, San Bernardino Co. (1)

Geology: several massive magnetite fragments in alluvial fan gravel

Conclusions: shows little promise

Location: SW¼ Sec. 1, T.7N., R.22E., SBBM, San Bernardino Co. (1)

Geology: minor magnetite clasts in Tertiary conglomerate, appear to be derived from thrusted Precambrian rocks underlying the conglomerate

Conclusions: shows little promise

Location: S½ Sec. 1, T.8N., R.12E., SBBM, San Bernardino Co. (1)

Geology: cobbles of iron oxide

Conclusions: shows little promise

Location: *Secs. 19 and 30, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Geology: scattered magnetite in 10′ by 10′ areas in gneiss

Location: *Sec. 6, T.10N., R.10E., SBBM, San Bernardino Co. (1)

Geology: lenses of magnetite and hematite in brecciated meta-igneous rocks

Location: S½ Sec. 17, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Geology: magnetite and hematite clasts ranging to boulders in alluvium

Conclusions: shows little promise

Location: *S½SE¼NE¼ Sec. 18, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Geology: zones to 100′ wide and 400–500′ long containing numerous lenses to 1′ wide, stringers, and disseminations of magnetite and hematite in silicified dolomitic marble; less than 20% of zones contain iron minerals; probably the source of the iron clasts in alluvium in Sec. 17

Location: NE¼ Sec. 17, T.2S., R.6E., SBBM, Riverside Co. (1)

Geology: estimated plus one million tons of massive magnetite-ilmenite averaging 43% Fe and 17% TiO_2 available to open-pit mining; at least 400,000 tons estimated in a single lens, remainder in several tabular lenses which parallel the foliation of surrounding biotite gneiss and schist dipping 45°NW; total outcrop length is 1800′

Conclusions: warrants further investigation as possible source of heavy aggregate or other non-iron-ore uses

Location: *SE¼NE¼ Sec. 23, T.2S., R.6E., SBBM, Riverside Co. (1)

Geology: three outcrops of magnetite-ilmenite, estimated to total about 2000 tons, in metasedimentary rocks

Location: SW¼SE¼ Sec. 9, T.3S., R.6E., SBBM, Riverside Co. (1)

Geology: lens of magnetite-ilmenite contains estimated 2000 long tons; samples assayed 49.7% Fe, 18.3% TiO_2, and 0.21% Mn; outcrop is approximately 90′ by 30′ by 6′ in gneiss

Conclusions: source of heavy aggregate or other non-iron-ore use

Location: *N½ Sec. 16, T.3S., R.6E., SBBM, Riverside Co. (1)

Geology: lenses of magnetite-ilmenite in gneiss and schist; largest lens is estimated to contain 13,000 long tons

Location: S½SW¼ Sec. 5, T.3S., R.7E., SBBM, Riverside Co. (1)

Geology: lenses of magnetite-ilmenite in gneiss and schist contain an estimated 24,600 long tons assaying 47% Fe and 19.5% TiO_2; largest lens contains an estimated 19,750 long tons

Conclusions: shows little promise due to inaccessibility

Location: SW¼ Sec. 11, T.11S., R.20E., SBBM, Imperial Co. (1)

Geology: rounded cobbles of hematite and magnetite float

Conclusions: shows little promise

Location: NE¼ Sec. 23, T.11S., R.20E., SBBM, Imperial Co. (1)

Geology: hematite lens about 2′ wide

Conclusions: shows little promise

LEAD [Pb]

MINES AND PROSPECTS

Name: Silver Dream (*Tiptop*)

Location: *SW¼SW¼ Sec. 17, T.2N., R.3E., SBBM, San Bernardino Co. (12,38)

Description: two 30′ shafts and several trenches; one ton produced 1941

Geology: galena in 5″ stringers with iron-stained halos along irregularly mineralized zone 60′ wide, 250′ long that strikes WNW, dips N in massive limestone

Name: Lost Spanish (*Old Spanish Victory*)

Location: *Sec. 28, T.2N., R.3E., SBBM, San Bernardino Co. (12,38)

Description: 60′ and 25′ inclines; active 1950; reported smelter recovery of 19.52% Pb, 2 oz. Ag, and minor Zn

Geology: argentiferous galena, sphalerite, lead and zinc carbonates in narrow quartz vein

Location: *NE¼NE¼SE¼ Sec. 20, T.5N., R.15E., SBBM, San Bernardino Co. (1)

Description: adit

Geology: meager galena along a shear zone that strikes NE, dips 70°SE in limestone

Name: Silver Wave

Location: *S½ Sec. 4, T.5N., R.17E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Cerro de La Plata (*Oro Plata*)

Location: *N½NE¼NW¼ Sec. 26, T.5N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *NW¼NW¼NW¼ Sec. 6, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: galena and chrysocolla in 1′ wide quartz vein that strikes N, dips E in granitic rocks

Name: Pay Checker (*La Mountain*)

Location: *claim in E½NW¼ Sec. 9, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: active 1956

Geology: lead sulphides, chalcopyrite, and sphalerite in silicified vein that strikes N10°E, dips 60°W in meta-andesite

Location: *W½SW¼SW¼ Sec. 11, T.6N., R.17E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: abundant pyrite and minor galena in 1′ quartz vein that strikes ENE and dips 53°S in quartz monzonite

Name: Ord Mountain (*Ord, Osborn, Rio Vista*)

Location: *E½E½ Sec. 13 and E½E½ Sec. 24, T.7N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Preston

Location: *SW¼ Sec. 7, T.8N., R.7E., SBBM, San Bernardino Co. (1)

Description: short adit

Geology: galena and barite in vein about 1′ wide that trends N, dips W in volcanic rocks

Location: NW¼ Sec. 13, T.8N., R.15E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *S½NE¼SE¼ Sec. 18, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Description: two inclines and pits

Geology: blebs of galena in 3′ wide quartz vein that strikes N35°E, dips 35°SE in gneiss and schist

Name: Burcham (*Total Wreck*)

Location: *N½NE¼ Sec. 21, T.10N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Carbonate

Location: *E½W½NW¼ Sec. 23, T.10N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Overlook

Location: *Sec. 16, T.10N., R.5E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Bonanza King

Location: *Sec. 3, T.10N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: C & K (*Bell Gilroy, McGilroy, Lead Capping*)

Location: *SW¼NE¼NE¼ Sec. 16, T.10N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Mitchell

Location: *E½SE¼ Sec. 21, T.10N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *NE¼NW¼ Sec. 8, T.10N., R.15E., SBBM, San Bernardino Co. (1)

Description: 30′ shaft and three trenches

Geology: minor pyrite, galena, limonite, and vanadinite in 6″ quartz vein in 3′ wide vertical shear zone that strikes N30°W in quartz monzonite

Name: Leiser Ray

Location: *SW¼SW¼ Sec. 15, SE¼SE¼ Sec. 16, NE¼NE¼ Sec. 21, and NW¼NW¼ Sec. 22, T.11N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: NW¼NW¼ Sec. 9 (NW¼ Tract 39), T.11N., R.19E., SBBM, San Bernardino Co. (1)

Description: two inclines, 75′ and 120′ deep; selected samples assayed trace Au, 0.36–1.04 oz. Ag, 0.3–4.1% Pb, and 0.35% V_2O_5

Geology: 2–4′ wide copper and iron-stained siliceous vein strikes N45°E for 300′ and dips 60–70°SE in augen gneiss

Conclusions: shows limited promise

Name: J. Juneau

Location: *$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 10, T.11N., R.19E., SBBM, San Bernardino Co. (12,38)

Description: several trenches and 50′ incline with drift at 40′ level; several tons reported shipped 1949 and 1951 with smelter recovery of 29.20% Pb, 7.50 oz. Ag, and 0.55% Cu

Geology: galena with minor malachite, azurite, and vanadinite(?) in 6–24″ wide quartz vein that strikes N70°W, dips 45°S in augen gneiss

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (1,2,36,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); daily yield calculated at 960 lbs. of lead based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: lead in complex chloride brine remained in solution at 350°F (estimated temperature at open end of horizontal discharge pipe); brine is possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

Name: Paymaster Group (*President, Hazel, Complex Minerals*)

Location: *$W\frac{1}{2}SE\frac{1}{4}$ and $SE\frac{1}{4}SW\frac{1}{4}$ Sec. 19 and Sec. 30, T.11S., R.20E., SBBM, Imperial Co.
(See under METALLICS, Silver)

LITHIUM [Li]

MINES AND PROSPECTS

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (1,2,36,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); daily yield calculated at 3,082 lbs. of lithium based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: complex chloride brine (482°F flow temperature at well head) possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

MANGANESE [Mn]

MINES AND PROSPECTS

Location: *Sec. 19, T.6N., R.2E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 18″ wide manganese vein strikes N50°E and dips 75°S in rhyolite

Name: Northrup (*Black Bonanza*)

Location: *E½NW¼ Sec. 8, T.8N., R.3E., SBBM, San Bernardino Co. (1,22,38)

Description: pit, 6′ by 10′

Geology: psilomelane in calcite stringers along shear zones in rhyolite

Name: Black Butte (*Big Reef*)

Location: *Secs. 3 and 10, T.8N., R.6E., SBBM, San Bernardino Co. (22,38)

Description: adits and pits; several hundred tons reported produced during World Wars I and II, and 125 tons of 40% Mn shipped in 1951; selected samples reportedly assayed 32.97–35.7% Mn and 1.29–1.78% Fe

Geology: psilomelane and minor pyrolusite in steeply dipping breccia zone to 8′ wide that strikes N10°W in andesite

Name: Paymaster

Location: S½ Sec. 21, T.8N., R.7E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: manganese oxides in 20′ wide, NW-trending breccia zone in andesite

Conclusions: shows little promise

Name: Lavic Mountain (*Lee Yim*)

Location: *NE¼ Sec. 27, T.8N., R.7E., SBBM, San Bernardino Co. (38)

Description: 100 tons of 38% Mn reportedly produced during World War I from pits and shallow shafts; explored by shafts and pits in 1942 and drilled in 1958

Geology: manganese oxides with calcite, jasper, and hematite in three breccia zones along faults that strike about N65°W, dip 70°N in rhyolite; mineralized portion of zones are generally 2–3′ wide, (maximum of 20′) and 30–100′ long

Name: Andreen

Location: *SW¼ Sec. 18, T.8N., R.8E., SBBM, San Bernardino Co. (1)

Description: pit and adit

Geology: manganese-oxide minerals and calcite along brecciated fault zone that strikes NNW in volcanic rocks

Location: W½SW¼ Sec. 21, T.9N., R.6E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: two manganese-oxide and calcite veins to 6″ wide strike NW and N for about 20′ in volcanic rocks

Conclusions: shows little promise

Name: Logan

Location: *Sec. 28, T.9N., R.6E., SBBM, San Bernardino Co. (22,38)

Description: 371 tons of 40% Mn and at least 200 tons of 19% Mn reportedly mined 1934–43 from pits to 20′ deep along a 600′ strike length; active 1958

Geology: manganese oxides and calcite stringers in shear zone to 50′ wide that strikes NW in andesite

Name: Read Ridge

Location: *Sec. 34, T.9N., R.6E., SBBM, San Bernardino Co. (1)

Description: pits and 30′ adit

Geology: manganese oxides and calcite lenses along breccia zone 1–3′ wide and 200′ long that strikes NW, dips 55°NE in andesite

Location: NE¼ Sec. 9, T.9N., R.8E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Black Mountain

Location: *NW¼NW¼ Sec. 6, T.9N., R.22E., SBBM, San Bernardino Co. (6,9,22,24)

Description: several pits and 100′(?) shaft; several hundred pounds of manganese ore reportedly shipped; selected sample assayed 40.2% Mn, 7.9% SiO_2, 8.4% Fe, and a trace of P

Geology: scattered lenses to 10′ long and 6–36″ wide of psilomelane with calcite in granite

Location: *SW¼NE¼ Sec. 31, T.11N., R.3E., SBBM, San Bernardino Co. (1)

Description: several pits

Geology: pyrolusite coatings along fracture in conglomerate

Location: *N½SW¼ and S½SE¼ Sec. 19, T.9S., R.21E., SBBM, Imperial Co. (1)

Description: pits

Geology: manganese minerals in faulted fanglomerate

Location: NE¼SE¼ Sec. 19, T.9S., R.21E., SBBM, Imperial Co. (1)

Description: pits

Geology: manganese minerals in faulted fanglomerate

Conclusions: shows little promise

Location: *Secs. 28, 29, and W½ Sec. 33, T.9S., R.21E., SBBM, Imperial Co. (1)

Description: pits, shafts, adits

Geology: manganese minerals in faulted andesitic lava and pyroclastic rocks

Location: SW¼SW¼ Sec. 11, T.11S., R.20E., SBBM, Imperial Co. (1)

Description: pit and trenches

Geology: sparse manganese oxide and calcite fill fractures in andesite dike which strikes N10°W, dips 6°W

Conclusions: shows little promise

Location: S½ Sec. 11, T.11S., R.21E., SBBM, Imperial Co. (1)

Description: pits

Geology: manganese-oxide minerals in fractured volcanic rocks

Conclusions: shows little promise

Name: Turtle (*Jet Black*)

Location: *Sec. 16, T.11S., R.21E., SBBM, Imperial Co. (13,22)

Description: short adits, shallow shafts, and pits

Geology: vertical fissure veins averaging about 20% Mn strike N30°W in andesitic breccia

Location: SW¼SW¼ Sec. 17, T.11S., R.21E., SBBM, Imperial Co. (1)

Description: pit

Geology: vein 6–30″ wide and 100′ long with some manganese minerals strikes N40°E, dips 75°SE in fanglomerate

Conclusions: shows little promise

Name: Whedon (*Tolbard, Moreno*)

Location: *Sec. 18 and N½NE¼ Sec. 19, T.11S., R.21E., SBBM, Imperial Co. (13,22)

Description: 3000 tons shipped 1917–18, and 1174 tons of 43% Mn shipped 1941–42; developed by two shafts, an incline and several adits

Geology: steeply dipping fissure veins 1–7′ wide and to 1500′ long contain psilomelane, manganite, and pyrolusite and trend NE in fanglomerate

Name: War Manganese

Location: *SW¼NE¼ Sec. 19, T.11S., R.21E., SBBM, Imperial Co. (13,22)

Description: less than 300 tons shipped during World War I, 24 tons of 14.15% Mn in 1943; developed by shaft and adit to vein; sample of dump assayed 31% Mn, 1.48% Fe, and 17.57% SiO_2

Geology: fissure vein 2–3′ wide containing psilomelane strikes N10–15°E in fanglomerate

OCCURRENCES

Location: *SW¼ Sec. 7, T.8N., R.2E., SBBM, San Bernardino Co. (1)

Geology: iron and manganese oxides in 400′ long by 20′ wide breccia zone that trends NE in granite

Name: Newberry

Location: NE¼NE¼ Sec. 5, T.8N., R.3E., SBBM, San Bernardino Co. (1,22,38)

Geology: psilomelane in stringers of calcite along shear zones a few inches to 14 feet wide that strike E-W in rhyolite; selected samples assayed 3.04–13.31% MnO_2, 64.4–39.40% SiO_2, and 0.039–0.07% P

Conclusions: shows little promise

Location: *NE¼ Sec. 1, T.8N., R.4E., SBBM, San Bernardino Co. (1)

Geology: pods and stringers of pyrolusite and psilomelane in fault gouge

Location: NE¼ Sec. 21, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Geology: manganiferous siltstone crops out for about 100′ long over thrust fault

Conclusions: shows little promise

Name: Black Stone

Location: *Sec. 28, T.11N., R.6E., SBBM, San Bernardino Co. (22)

Geology: manganese-oxide minerals in lenses to 50′ long and 8–10′ wide crop out for 1000′ along N-trending contact of granite with limestone

Location: *SW¼ Sec. 31, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Geology: manganese-oxide minerals crop out in 8′ by 10′ area along fault that strikes N15°W, dips 60°NE in tuff breccia

Location: *Sec. 26, T.6S., R.10E., SBBM, Riverside Co. (29)

Geology: irregular nodules of pyrolusite and psilomelane in schist; outcrop is 1½-2′ wide and 20′ long

MERCURY [Hg]

MINES AND PROSPECTS

Location: *Sec. 3, T.6N., R.17E., SBBM, San Bernardino Co. (1)

Description: many pits

Geology: meager cinnabar with minor antimony in gneiss and quartz monzonite

NICKEL [Ni]

MINES AND PROSPECTS

Location: *NW¼NW¼NW¼ Sec. 19, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Description: 50′ adit and pit

Geology: niccolite, arsenopyrite, annabergite and uvarovite in vertical silicic dike that strikes NE along a shear zone in hornfels and quartzite

SILVER [Ag]

MINES AND PROSPECTS

Location: SE¼SE¼ Sec. 35, T.1N., R.4E., SBBM, San Bernardino Co. (1)

Description: 100′ adit; selected sample assayed 0.08 oz. Au, 5.4 oz. Ag, and 1.3% Cu

Geology: hematite and limonite with minor chalcopyrite and azurite in 3′ wide vein in quartz monzonite

Conclusions: shows little promise

Name: Lost Spanish (*Old Spanish Victory*)

Location: *Sec. 28, T.2N., R.3E., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Location: *SW¼SE¼SW¼ Sec. 16, T.3N., R.16E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *E½SW¼NE¼ and SE¼NE¼ Sec. 5, T.4N., R.17E., SBBM, San Bernardino Co. (1)

Description: short adit and pits

Geology: iron and copper-stained quartz veins 2–6′ wide along NNW-trending shear zones in granite

Location: NE¼SW¼SW¼ Sec. 9, T.4N., R.17E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Vulcan (*McClintock*)

Location: *SW¼SE¼SW¼ Sec. 11, T.5N., R.15E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Silver Wave

Location: *S½ Sec. 4, T.5N., R.17E., SBBM, San Bernardino Co. (38)

Description: four adits; $15,000 in Ag and Pb reportedly produced in 1902

Geology: quartz vein strikes N15–25°W in metamorphic rocks

Name: Gemco

Location: *N½N½(?) Sec. 10, T.5N., R.17E., SBBM, San Bernardino Co. (12,38)

Description: 32 tons of Ag-Au ore containing recoverable Pb reported produced 1936 from 800′ adit and 60′ shaft with 200′ of drifts

Geology: galena, argentite, sphalerite and auriferous chalcopyrite in quartz vein in granite contains principal values in silver

Name: Cerro de La Plata (*Oro Plata*)

Location: *N½NE¼NW¼ Sec. 26, T.5N., R.18E., SBBM, San Bernardino Co. (1,12,38)

Description: pits and four shafts, 30–170′ deep

Geology: steeply-dipping quartz vein to 2′ wide strikes WNW for over 1000′ in granitic gneiss

Name: Lucky Jim

Location: *SE¼NW¼ Sec. 26(?), T.5N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Location: NW¼ Sec. 21, T.6N., R.1E., SBBM, San Bernardino Co. (1)

Description: 70′ adit and numerous pits; selected samples assayed a trace of Au, 0.05–0.10 oz. Ag, and 0.02–0.07% Cu

Geology: 3′ wide iron-stained quartz vein strikes NE in granite and metamorphic rocks

Conclusions: shows little promise

Location: E½ Sec. 25, T.6N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Location: *NW¼SW¼SW¼ Sec. 28, T.6N., R.3E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: quartz stringers in hornblende diorite

Name: Wheel of Fortune

Location: *SE¼SE¼ Sec. 13, T.6N., R.16E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Ord Mountain (*Ord, Osborn, Rio Vista*)

Location: *E½E½ Sec. 13 and E½E½ Sec. 24, T.7N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Silver Cliff (*Silver Reef*)

Location: *Sec. 18, T.7N., R.5E., SBBM, San Bernardino Co. (12)

Description: 376′ shaft and 150′ incline

Geology: silver and lead minerals reported in two veins 3–8′ wide that trend NW, dip 20–40°SW in basalt and andesite

Name: L and L

Location: *N½ Sec. 17, T.7N., R.3E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Location: *SE¼ Sec. 23, T.7N., R.11E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Location: SE¼ Sec. 33, T.7N., R.13E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Lame Dog

Location: *Sec. 8, T.7N., R.21E., SBBM, San Bernardino Co. (1)

Description: numerous pits

Geology: galena containing gold and silver in irregular, low-dipping veins of calcite and barite in augen gneiss

Name: Lucky Don Juan

Location: *SE¼SW¼ Sec. 28, T.8N., R.3E., SBBM, San Bernardino Co. (1)

Description: two shafts and adit

Geology: NE-trending shear zone in quartzite and amphibolite

Location: W½W½ Sec. 5, T.8N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Hidden Hill

Location: *E½ Sec. 6, T.8N., R.14E., and Sec. 31, T.9N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: NW¼ Sec. 13, T.8N., R.15E., SBBM, San Bernardino Co. (1)

Description: 80′ incline and several pits; selected samples assayed 0.040–0.210 oz. Au, 0.9–6.1 oz. Ag, 0.2–11.4% Pb, and 0.239–1.37% Cu; no production

Geology: intermittent N-trending copper-stained quartz veins in silicified gneiss and schist; one vein strikes N30°W, dips 45°E, is 2′ wide

Conclusions: shows limited promise

Location: $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 25, T.8N., R.15E., SBBM, San Bernardino Co. (1)

Description: pit; sample across vein assayed 0.005 oz. Au, 0.3 oz. Ag and 1.26% Cu

Geology: chalcopyrite and bornite disseminated in 6–10″ quartz vein in gneiss

Conclusions: shows little promise

Location: $NE\frac{1}{4}$ Sec. 9, T.9N., R.8E., SBBM, San Bernardino Co. (1)

Description: two pits; selected samples assayed trace to 0.02 oz. Au, 0.12–5.2 oz. Ag, and 23.9% Mn

Geology: silver-bearing quartz-manganese vein about 2′ wide strikes N70°W, dips 57°SW in quartz monzonite

Conclusions: shows little promise

Name: Comanche

Location: *Sec. 26, T.9N., R.12E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Lampis

Location: *$S\frac{1}{2}NW\frac{1}{4}$ Sec. 16, T.9N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Coarse Gold

Location: *$E\frac{1}{2}NE\frac{1}{4}$ Sec. 20 and $W\frac{1}{2}W\frac{1}{2}$ Sec. 21, T.9N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Louisa (*Chausse*)

Location: *$S\frac{1}{2}SW\frac{1}{4}$ and $N\frac{1}{2}SW\frac{1}{4}$ Sec. 25, T.9N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *$SE\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}$ Sec. 5, T.9N., R.19E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Gold Ridge (*Ibex*)

Location: *$SW\frac{1}{4}NE\frac{1}{4}$ and $W\frac{1}{2}SE\frac{1}{4}$ Sec. 13, T.9N., R.20E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Galena King (*Revier*)

Location: *$W\frac{1}{2}SW\frac{1}{4}$ Sec. 5, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: shallow pits, shafts, winzes, open cuts for $\frac{1}{2}$ mile along strike; active 1950's

Geology: barite-jasper vein trends NW in brecciated volcanic rocks

Name: Langtry

Location: *$W\frac{1}{2}SW\frac{1}{4}NW\frac{1}{4}$ Sec. 8 and $E\frac{1}{2}SE\frac{1}{4}NE\frac{1}{4}$ Sec. 9, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: 250′ workings, 50′ winze from which 200 tons ore mined; ore reported to average 6–22 oz. Ag

Geology: barite and quartz containing iron and manganese oxides, lead carbonates, and silver chlorides in two veins, 3–4′ wide, 60′ apart that strike NW and dip steeply toward each other in lacustrine sediments

Name: Leviathon

Location: *$E\frac{1}{2}NE\frac{1}{4}NE\frac{1}{4}$ Sec. 8, and $W\frac{1}{2}NW\frac{1}{4}NW\frac{1}{4}$ Sec. 9, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: four adit levels with 1500′ of drifts, two winzes and shafts over 100′ deep with stopes open to surface

Geology: silver minerals in barite-jasper gangue with abundant iron oxides in parallel veins to 50′ wide along zone several hundred feet wide and over 2000′ long; large tonnage of barite reported

Name: Silver Bow

Location: *$SE\frac{1}{4}NW\frac{1}{4}$ Sec. 9, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: 230′ incline with 500′ of drifts; several carloads shipped prior to 1925 reported to average 100 oz. Ag

Geology: silver and lead minerals in 3′ wide barite vein in volcanic rocks

Name: Silver Contact

Location: *$NW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$ Sec. 9, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: 150′ and 65′ inclines

Geology: silver minerals in barite vein in tuffaceous andesite flows near vent agglomerate

Name: Humbug

Location: *$S\frac{1}{2}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 10, T.10N., R.1E., SBBM, San Bernardino Co. (10,38)

Description: pit, 30′ deep

Geology: cerargyrite and minor chrysocolla disseminated in lacustrine beds

Name: Comet

Location: *$S\frac{1}{2}$ Sec. 14(?), T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: adit to vein at depth of 75′; reported tenors of 35–950 oz. Ag

Geology: "pockets" of silver chlorides in barite vein 6–8′ wide that dips steeply S in volcanic rocks

Name: Blackfoot (*Blackfoot-Golconda*)

Location: *$NW\frac{1}{4}SE\frac{1}{4}$ Sec. 14, T.10N., R.1E., SBBM, San Bernardino Co. (10,24,38)

Description: shallow shafts and pits; shoots 6–10′′ wide and 300–400′ long

Geology: cerargyrite and lead carbonates with jasper to depths of 75′, largely in hanging wall of WNW fault that dips 50–75°N in altered andesite

Name: Garfield (*Garfield-Thunderer, Veto*)

Location: *$NW\frac{1}{4}$ Sec. 14, T.10N., R.1E., SBBM, San Bernardino Co. (23,24,27,28,38)

Description: reported yield of $290,000 from 2400 tons 1883–84; active 1896; lower 4000′ adit and upper 2500′ adit

Geology: cerargyrite, embolite and minor chrysocolla in barite along a brecciated and fractured zone which strikes NW, dips 75°SW in rhyolite tuff

Name: Odessa-Cuba-Baltic

Location: *S½(?) Sec. 14, T.10N., R.1E., SBBM, San Bernardino Co. (23,24,27,28,38)

Description: 600′ adit on fault, several other adits to 300′ long and several inclined winzes to 100′ long

Geology: cerargyrite and embolite with minor malachite and chrysocolla in irregular "pockets" along faults that strike about N40°W, dip 70°W in rhyolite tuff

Name: Alabama-Mountain View-Snowbird Group

Location: *S½SE¼SE¼ Sec. 14 and N½NE¼NE¼ Sec. 23, T.10N., R.1E., SBBM, San Bernardino Co. (27,38)

Description: short adits and open cuts

Geology: cerargyrite and embolite in fractures and seams in brecciated rhyolite tuff

Name: Argentum Group

Location: *E½NE¼ Sec. 15, T.10N., R.1E., SBBM, San Bernardino Co. (27,38)

Description: several open cuts and adits

Geology: silver chlorides and chlorobromides in irregular fractures and joint planes in rhyolite tuff along the Bismark fault which strikes N17°W, dips 30°W

Name: Bismark

Location: *NE¼NE¼ Sec. 15, T.10N., R.1E., SBBM, San Bernardino Co. (10,38)

Description: several inclines to 100′ depth

Geology: cerargyrite with minor chrysocolla in irregular barite lenses to 8″ wide along fault zone which strikes N17°W, dips 30°W between andesite hanging wall and sandy tuff footwall

Name: Falls (*Sioux, Sue*)

Location: *W½NW¼NW¼ Sec. 15, T.10N., R.1E., SBBM, San Bernardino Co. (27,38)

Description: numerous adits and shafts, to depths of 300′

Geology: four or five silver-bearing veins along NW-trending fault zone 300′ wide and ¼ mile long in intrusive porphyritic andesite and latite

Name: Consolidated (*St. Louis*)

Location: *W½SW¼NW¼ Sec. 15, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: about 500′ of workings

Geology: silver-bearing veins along NW-trending fault in intrusive porphyritic andesite and latite

Name: Silver King (*Silver King-Oriental, Zenda*) (includes the Burning Moscow, Joseph, Josephine, Oregon, Oriental, Red Cloud, Red Jacket, and Wall Street claims)

Location: *W½SW¼SE¼(?) Sec. 15, T.10N., R.1E., SBBM, San Bernardino Co. (23,24,27,28,38)

Description: active 1881–93; reported production of 37,000 tons with gross value $1,355,000 1883–86 and $15,000 of Ag in 1930; modest Ag recovery from tailings 1936–41; total underground workings of over 12,000′; originally worked via 500′ incline and then from numerous crosscuts on five levels; about 6,000′ of drifts; two shafts, 340′ and 530′ deep sunk 1926

Geology: cerargyrite and embolite disseminations and fracture fillings in barite and jasper veins along faults in rhyolite tuff; two 2–24″ wide veins, the Oriental and Silver King strike NW, dip 70°SW to vertical; vein system traceable for two miles on surface where manganese oxides are common; chalcopyrite, pyrite, and tetrahedrite reported at depth

Name: Voca

Location: *SW¼SW¼SE¼(?) Sec. 16, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: daily reported yield of 15–20 tons of 40 oz. Ag prior to 1888

Geology: silver minerals in siliceous gangue with minor barite

Name: Union

Location: *NW¼SW¼SE¼ Sec. 16, T.10N., R.1E., SBBM, San Bernardino Co. (10,27,28,38)

Description: 400′ adit to vein, two 100′ winzes, and about 1000′ of drifts; active 1940

Geology: lead, silver, and gold minerals in 6–30′ wide iron-stained barite vein that strikes N50°W, dips 50°S along a shear zone between rhyolite breccia and lakebeds; vein flattens with depth

Name: Waterloo

Location: *N½S½SW¼ Sec. 16, T.10N., R.1E., SBBM, San Bernardino Co. (10,23,24,27,28,38)

Description: active 1881–96; 350′ shaft with seven levels at 50′ intervals, over 12,000′ of drifts; activity in 1950 on 540′ extension of seventh level to intersect Union vein; lode reported 1100′ long, 4–70′ wide, and 525′ deep; reported tenor of 11–20 oz. Ag

Geology: cerargyrite and embolite in barite-jasper gangue along fault which strikes NW and dips 40°S between lakebeds and volcanic rocks

Name: Prosperity (*Possibility*)-Lamar

Location: *W½SW¼NW¼ Sec. 16 and E½SE¼NE¼ Sec. 17, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: short adits; all workings reported within 200′ of surface

Geology: fault zone several hundred feet wide and ½ mile long strikes NW in lacustrine sediments

Name: Mulcahy

Location: *NE¼SE¼NE¼(?) Sec. 17, T.10N., R.1E., SBBM, San Bernardino Co. (1,38)

Description: shaft and pits

Geology: cerargyrite in vein in sedimentary rocks

Name: Burcham (*Total Wreck*)

Location: *N½NE¼ Sec. 21, T.10N., R.1E., SBBM, San Bernardino Co. (10,23,24,27,28,38)

Description: 512′ adit to vein and three 250′ winzes 200′ apart on Burcham vein; 410′ adit to vein and 740′ adit on Mulcahy vein; total underground workings of about 12,000′ intermittently active between middle 1880's–1941; reported tenor of Mulcahy vein about $6.50

Geology: gold, galena, sphalerite, and cerargyrite in two quartz veins in sedimentary and volcanic rocks; 3–10′ wide Burcham vein strikes N70°W, dips 65°S; 4–30′ wide

Mulcahy vein strikes N45°W, dips 65°SW, both veins terminated by NW-trending thrust fault

Name: Silver Monument

Location: *W½NE¼NE¼ Sec. 22, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: active 1887–96; pits to depth of 65′

Geology: silver minerals disseminated in rhyolite tuff and ash

Name: Dietzman Group

Location: *NE¼NW¼NE¼ Sec. 23, T.10N., R.1E., SBBM, San Bernardino Co. (24,27,38)

Description: trenches and short adits

Geology: cerargyrite and embolite in veins in brecciated rhyolite tuff

Name: Carbonate

Location: *E½W½NW¼ Sec. 23, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: several hundred feet of trenches and short adits; concentrate reported to assay 25 oz. Ag, 0.187 oz. Au, and 19% Pb

Geology: silver minerals in tuff

Location: *S½NE¼SE¼ Sec. 25, T.10N., R.1E., SBBM, San Bernardino Co. (1)

Description: three pits

Geology: 2′ barite vein in intrusive andesite and latite porphyry

Location: N½N½NE¼ Sec. 9, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: 30′ shaft and several pits; selected sample assayed 0.005 oz. Au and 2.2 oz. Ag

Geology: iron-stained parallel quartz veins 4–5′ wide in granite

Conclusions: shows little promise

Name: Overlook

Location: *Sec. 16, T.10N., R.5E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Bonanza King

Location: *Sec. 3, T.10N., R.14E., SBBM, San Bernardino Co. (1,6,9,12,24,38)

Description: 540′ shaft with five levels and 300′ winze to 800′ depth; over 20,000′ of underground workings; reported monthly production of $60,000 in Ag and Pb 1883–87; active 1914–20

Geology: galena, cerussite, and cerargyrite in 4–20′ wide lenses along faults in quartz monzonite and limestone

Name: C & K (*Bell Gilroy, McGilroy, Lead Capping*)

Location: *SW¼NE¼NE¼ Sec. 16, T.10N., R.14E., SBBM, San Bernardino Co. (1,9,12,24,38)

Description: four adits, 65–300′ long; intermittently active 1880's–1951; production reported 1913, 1946 and 1949–50; average smelter recovery on last reported shipment assayed 2.76% Pb, 7.96 oz. Ag and minor Cu

Geology: argentiferous galena in silicified limestone breccia along fault that strikes N and dips 30–40°E; near contact with quartz monzonite

Name: Mitchell

Location: *E½SE¼ Sec. 21, T.10N., R.14E., SBBM, San Bernardino Co. (1,12,38)

Description: 250′ adit and shallow open cuts; negligible production; 250 tons ore on dump reported to assay 15% Pb and 5 oz. Ag

Geology: galena and cerrusite in N30°W fissures that dip steeply W in limestone

Name: Minnie Gold, Gold Turtle, Desert Gold Group

Location: *E½SE¼NE¼ Sec. 33, T.10N., R.20E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *SE¼SW¼SE¼ Sec. 20, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Description: two shallow shafts

Geology: galena and chalcopyrite with minor azurite and malachite in quartz vein that strikes NNW and dips steeply W to vertically in quartz diorite

Location: *S½NW¼ Sec. 21, T.11N., R.6E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: California (*Von Trigger, Hummingbird*)

Location: *SE¼ Sec. 10 and SW¼ Sec. 11, T.11N., R.17E., SBBM, San Bernardino Co.
(See under METALLICS, Copper)

Name: Leiser Ray (*California Comstock*)

Location: *SW¼SW¼ Sec. 15, SE¼SE¼ Sec. 16, NE¼NE¼ Sec. 21, and NW¼NW¼ Sec. 22, T.11N., R.18E., SBBM, San Bernardino Co. (1,12,15,38)

Description: Ag, Cu, Au, and Pb reported produced 1913, 1916–17, and 1935–36, from 925′ shaft with nine levels, an incline, and several other shafts, adits and pits

Geology: copper, lead, and zinc sulfides and vanadates with silver and gold in two parallel 4–12′ wide quartz veins that strike E and dip 45°N in quartz monzonite

Location: NW¼NW¼ Sec. 9 (NW¼ Tract 39), T.11N., R.19E., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Name: J. Juneau

Location: *SE¼SE¼ Sec. 10, T.11N., R.19E., SBBM, San Bernardino Co.
(See under METALLICS, Lead)

Location: *NW¼NE¼NE¼ Sec. 13, T.12N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Location: *E½SW¼ Sec. 18, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: adit

Geology: silver, gold, and pyrite in NW-trending shear zone in quartzite and hornfels

Location: W½ Sec. 17, T.2S., R.5E., SBBM, Riverside Co. (1)

Description: 70′ incline shaft (30°); samples reportedly assayed 0.005–0.26 oz. Au, trace to 18.4 oz. Ag, to 13.2% Pb, and to 8.0% Zn; selected samples in 1963 assayed no Au, trace to 0.28 oz. Ag, 0.01–0.02% Cu, trace to 0.22% Pb, trace to 0.11% Zn, no BeO_2, and no WO_3

Geology: disseminated replacement veins in gneiss

Conclusions: shows limited promise

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (1,2,36,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); daily yield calculated at 276 troy oz. of silver based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: argentiferous sulfide deposits formed during 90-day flow test inside 275′ horizontal discharge pipe assayed 381 oz. Ag and 0.11 oz. Au per ton; one-tenth of total silver content of the complex chloride brine crystallized out at temperatures ranging from estimated 350°F at discharge end of pipe to 482°F measured at well-head end; brine is possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

Name: Paymaster Group (*President, Hazel, Complex Minerals*)

Location: *W½SE¼ and SE¼SW¼ Sec. 19 and Sec. 30, T.11S., R.20E., SBBM, Imperial Co. (1,21)

Description: about $1 million in silver reportedly produced 1867–1880; also some production 1919–21 and 1938–39; 80,000 tons mined from President workings reportedly assayed 8.2 oz. Ag, 0.015 oz. Au, and 3.5% Pb; developed from shafts by about two miles of drifts

Geology: cerargyrite, galena, and cerussite with quartz and calcite in vein 4–35′ wide which strikes about N60°E, dips 65°NW, and is about 4,000′ long; wall rock is predominantly gneissic diorite

Location: NE¼ Sec. 19, T.11S., R.20E., SBBM, Imperial Co. (1,12)

Description: 75′ shaft and 25′ adit; no recorded production

Geology: siliceous vein 4–6′ wide reportedly containing argentiferous galena oxidized to cerussite strikes N60°E and dips 70°N in granite

Conclusions: warrants further investigation

Name: Rainbow (*Consolidated, Buena Suerte*)

Location: *Sec. 24, T.11S., R.20E., SBBM, Imperial Co. (1)

Description: 40′ shaft

Geology: vein to 4′ wide and 700′ long associated with andesite dike

Name: True Friend (*Silver Moon*)

Location: *NW¼ Sec. 25, T.11S., R.20E., SBBM, Imperial Co. (1)

Description: two shafts to 48′ depth and 150′ adit

Geology: vein associated with 14′ wide andesite dike striking N42°E

OCCURRENCES

Location: W½W½SW¼ Sec. 25, T.4N., R.13E., SBBM, San Bernardino Co. (1)

Geology: iron and copper-stained quartz veins trend NE in gneiss; selected sample assayed a trace Au and 1.4 oz. Ag

Conclusions: shows little promise

Location: E½NW¼NE¼ Sec. 29, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Geology: galena, sphalerite and minor azurite and malachite in 6–12″ wide quartz vein that strikes N15–20°W and dips 85°W to vertically along fault in quartz diorite; vein traced for 3,600′ along strike into SE¼ Sec. 20; selected sample assayed 0.11 oz. Au, 4.7 oz. Ag, and 0.91% Cu

Conclusions: shows little promise

TUNGSTEN [W]

MINES AND PROSPECTS

Name: Blue Vase

Location: *SE¼(?) Sec. 2, T.2N., R.3E., SBBM, San Bernardino Co. (38)

Description: two trenches and two 20′ pits

Geology: scheelite in quartz veins along 40′ wide zone in quartz monzonite

Name: Sunnyside (*Livingstone, Morongo King*)

Location: *NW¼SE¼NW¼ Sec. 27, T.2N., R.3E., SBBM, San Bernardino Co. (9,38)
(See under METALLICS, Gold)

Name: Udsogn (*Chubbuck Scheelite*)

Location: *E½ Sec. 18, T.4N., R.17E., SBBM, San Bernardino Co. (1,38)

Description: several pits and shallow shafts; 12 tons reportedly produced in 1943

Geology: scheelite in 4′ wide tactite zone in marble

Name: Packard

Location: *Sec. 4, T.5N., R.17E., SBBM, San Bernardino Co. (38)

Description: pits; active 1952

Geology: 6–8′ wide scheelite-bearing tactite zone that dips 55°NW traced for 100′ in marble and biotite schist

Name: Hidden Value (*Victory*)

Location: *Secs. 6 and 8, T.5N., R.17E., SBBM, San Bernardino Co. (28,38)

Description: adits; intermittently produced over 500 units of WO_3 1943–53; average tenor 2.75% WO_3 reported; tactite zone reported to assay 0.5–3% WO_3

Geology: scheelite in 10–36′ wide by 70–250′ long lenses in tactite zone to 300′ wide that strikes N40°E, dips 30–40°W in metamorphic rocks; scheelite-bearing veins also reported in granite

Name: Howe (*Section 9*)

Location: *Sec. 9, T.5N., R.17E., SBBM, San Bernardino Co. (28,38)

Description: 218 tons of 4.35% WO_3 reported produced from cut, 100′ long and 24′ deep in 1944; intermittently active 1944–53

Geology: scheelite disseminated in lens 6–10′ wide by 150′ long in tactite zone that strikes N40°E, dips 30°W in metamorphic rocks

Name: Pure Quill

Location: *$NW\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ Sec. 4, T.6N., R.1E., SBBM, San Bernardino Co. (1,38)

Description: active 1950–52; adit 200′ long with over 200′ of drifts

Geology: scheelite disseminated in amphibolite layer 5–20′ wide and over 1000′ long that strikes N65°W and dips S in crystalline rocks; scheelite also reported with copper oxides as coatings in fractures in quartz zone trending N5°E

Name: Jumbo

Location: *$SE\frac{1}{4}SW\frac{1}{4}NE\frac{1}{4}$ Sec. 28, T.6N., R.17E., SBBM, San Bernardino Co. (38)

Description: owner reported 50 tons produced in 1950

Geology: scheelite in tactite

Name: Margareta #1

Location: *$NW\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$ Sec. 17, T.6N., R.18E., SBBM, San Bernardino Co. (1)

Description: shallow shaft and pits

Geology: scheelite in NE-trending tactite zone in gneiss

Location: *$NW\frac{1}{4}$ Sec. 18, T.6N., R.18E., SBBM, San Bernardino Co. (1)

Description: several pits

Geology: scheelite in gneiss

Name: White Dollar (*May Day*)

Location: *$S\frac{1}{2}NE\frac{1}{4}SE\frac{1}{4}$ Sec. 7, T.7N., R.2E., SBBM, San Bernardino Co. (28,38)

Description: several hundred tons of about 1% WO_3 reported mined 1951–52 from trenches, and shallow incline

Geology: scheelite disseminated in brecciated scarn along shear zone that strikes N10–20°W in volcanic and granitic rocks

Location: $S\frac{1}{2}$ and $NE\frac{1}{4}$ Sec. 5, T.7N., R.12E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: traces of scheelite along NE-trending contact between marble and intrusive rocks

Conclusions: shows little promise

Name: Clipper Mountains

Location: *$N\frac{1}{2}SE\frac{1}{4}$ Sec. 23, T.8N., R.15E., SBBM, San Bernardino Co. (1,38)

Description: 150 tons containing 96 units WO_3 reportedly produced in 1951-mid 1952; active 1951–57; shallow trenches and pits

Geology: scheelite in garnet-rich tactite zones in marble within gneiss and biotite schist associated with quartz diorite

Name: Ferberite

Location: *E½ Sec. 19 and W½ Sec. 20, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Description: four shallow pits

Geology: scheelite-bearing veins 1′ wide in zone that strikes N55–60°W in gneiss and schist

Location: *N½NE¼ Sec. 7, T.11N., R.1E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: scheelite disseminated in NE-trending tactite zone along marble-diorite contact

Location: *SE¼SE¼ Sec. 28, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Description: 30′ trench

Geology: scheelite disseminated in roof pendant of tactite in quartz diorite

Location: N½ Sec. 33, T.11N., R.8E., SBBM, San Bernardino Co. (1)

Description: short incline; selected sample assayed 2.82% WO_3

Geology: scheelite and calc-silicate minerals in marble of limited extent

Conclusions: shows little promise

Name: Tungsten Flat

Location: *Sec. 4, E½SE¼ Sec. 8, NW¼NE¼, NW¼, N½SW¼, and SW¼SE¼ Sec. 9, SW¼NE¼, SE¼NE¼NW¼, S½NW¼, and NE¼SW¼ Sec. 16, SW¼NE¼ and NE¼NW¼ Sec. 17, and NW¼NE¼ and N½NW¼ Sec. 21, T.11N., R.18E., SBBM, San Bernardino Co. (1,15)

Description: numerous pits, trenches, adits, and shafts to depths of about 100′

Geology: wolframite with minor vanadium minerals in steeply dipping quartz stringers and veins that strike NW in quartz monzonite and in granite to diorite augen gneiss roof pendants in quartz monzonite

Location: SW¼NE¼ Sec. 17, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Description: 15′ pit; 0.5% WO_3 estimated

Geology: scheelite in garnetiferous zones in a tactite body about 100′ wide and 300′ long which is a roof pendant in diorite

Conclusions: warrants further investigation

Location: S½NW¼, W½SW¼, SE¼SE¼SW¼, and SW¼SE¼ Sec. 17, T.12N., R.1E., SBBM, San Bernardino Co. (1,14)

Description: active 1951 and 1956; four pits and several trenches

Geology: scheelite in tactite zones 75–100′ long and 20–30′ wide that trend NE and appear to dip 70°NW in marble lenses in quartz diorite

Conclusions: warrants further investigation

Name: Starbright

Location: *E½NE¼ Sec. 19, T.12N., R.1E., SBBM, San Bernardino Co. (1,14,38)

Description: over $1,000,000 of 1.5–2.0% WO_3 reported mined from open pit and 80′ incline prior to 1953

Geology: scheelite disseminated in highly fractured tactite lens, 100′ long, 40–50′ wide and about 15′ thick that dips about 30–45°SE in quartz diorite; two smaller tactite lenses also reported

Name: Paradise Mountains

Location: *SE¼SE¼SE¼ Sec. 6, T.12N., R.2E., SBBM, San Bernardino Co. (28,38)

Description: pits and shallow shafts; 2% WO_3 reported

Geology: scheelite-bearing tactite zone, 4′ wide along dolomite-quartz monzonite contact

Name: Celestial Deposit

Location: *NW¼NE¼ Sec. 9, T.12N., R.2E., SBBM, San Bernardino Co. (1,38)

Description: 35′ incline and several pits

Geology: scheelite disseminated in tactite zones to 2′ wide along granodiorite-limestone contact

Location: *SW¼SW¼ Sec. 27, T.12N., R.3E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: scheelite in tactite zone to 50′ wide in marble roof pendant in quartz diorite

Location: NE¼NW¼ Sec. 33, T.12N., R.3E., SBBM, San Bernardino Co. (1)

Description: shallow pit; 103.5 tons of 0.24% WO_3 reported produced in 1953–54

Geology: scheelite in tactite zone in adjacent 5′ wide granodiorite dike in limestone

Conclusions: shows limited promise

OCCURRENCES

Location: N½NW¼NE¼ Sec. 33, T.8N., R.3E., SBBM, San Bernardino Co. (1)

Geology: chrysocolla, minor malachite, copper oxides, and disseminated grains of scheelite in a NW-trending shear zone 2′ wide and 5–10′ long between marble and quartzite; selected sample assayed 1.30% WO_3, 0.05 oz. Ag, and a trace Au

Conclusions: shows little promise

TRENDS

Location: SW¼SW¼SW¼ Sec. 33, T.7N., R.1E., SBBM, San Bernardino Co. (1,38)

Geology: scheelite-bearing quartz veins to 10′ wide in metamorphic-igneous complex extend N from the Pure Quill mine in Sec. 4, T.6N., R.1E.

URANIUM, THORIUM AND RARE EARTHS

MINES AND PROSPECTS

Name: Hope

Location: *NE¼SW¼ Sec. 18, T.6N., R.13E., SBBM, San Bernardino Co. (5)

Description: shallow shaft and incline; five times background radioactivity reported for one sample

Geology: in a N-trending zone near contact between nordmarkite and dolomite; contact metamorphism has produced minor amounts of calc-silicate minerals; fluoborite also occurs locally with uranium, thorium, and rare-earth minerals

Location: Sec. 21, T.10N., R.2E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Magnesite)

Name: Harvard Hills

Location: *SE¼SE¼SE¼ Sec. 21 and NE¼NE¼NE¼ Sec. 28, T.10N., R.3E., SBBM, San Bernardino Co. (1,35)

Description: 25′ shaft and numerous pits

Geology: autunite and carnotite(?) coatings on fractures and bedding surfaces in lake beds of tuffaceous sandstone, clay, chert, and limestone

OCCURRENCES

Location: SE¼SE¼ Sec. 13, T.2N., R.3E., SBBM, San Bernardino Co. (1)

Geology: torbernite grains disseminated in quartz monzonite

Conclusions: shows little promise

Location: SW¼NE¼NE¼ Sec. 33, T.8N., R.3E., SBBM, San Bernardino Co.

Geology: (see under METALLICS, Iron)

Conclusions: shows little promise

Location: *SE¼SW¼SE¼ Sec. 7, T.8N., R.16E., SBBM, San Bernardino Co. (1)

Geology: 1′ wide pod containing allanite in zoned pegmatite 200′ long and 15′ wide in gneiss

Name: Hoerner-Ross

Location: *SW¼ Sec. 16, T.9N., R.6E., SBBM, San Bernardino Co. (16,35)

Geology: minor strueverite, cyrtolite, and betafite in pegmatite dike about 100′ long and less than 25′ wide

VANADIUM [V]

MINES AND PROSPECTS

Name: Leiser Ray

Location: *SW¼SW¼ Sec. 15, SE¼SE¼ Sec. 16, NE¼NE¼ Sec. 21, and NW¼NW¼ Sec. 22, T.11N., R.18E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

ZINC [Zn]

MINES AND PROSPECTS

Name: Burcham (*Total Wreck*)

Location: *N½NE¼ Sec. 21, T.10N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Mitchell

Location: *E½SE¼ Sec. 21, T.10N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (1,2,36,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); daily yield calculated at 4,800 lbs. of zinc based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: zinc in complex chloride brine remained in solution at 350°F (estimated temperature of open end of horizontal discharge pipe); brine is possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

Industrial Rocks and Minerals

The introductory paragraph relating to deposits[1] of industrial rocks and minerals in PART I (see page 19) is also pertinent here.

Of the Southern Pacific properties listed, the following in the PART III area are considered to be the most promising:

BROKEN STONE:

SW¼NW¼ Sec. 35, T.12N., R.6E., SBBM, San Bernardino Co.
S½SW¼ Sec. 23 and E½W½ Sec. 25, T.3S., R.3E., SBBM, San Bernardino Co.

CALCIUM CHLORIDE:

Secs. 1, 9, 13 and S½ Sec. 23, T.2N., R.15E.; N½ and SW¼ Sec. 17 and NW¼ Sec. 19, T.2N., R.16E.; Sec. 13, T.3N., R.14E.; and Secs. 17, 21, 29 and 33, T.3N., R.15E., SBBM, San Bernardino Co.

CARBON DIOXIDE:

Secs. 3 and 11, T.11S., R.13E., SBBM, Imperial Co.

CLAYS:

W½ Sec. 1, T.7N., R.23E., SBBM, San Bernardino Co.
Secs. 17, 21 and 29, T.10N., R.22E., and Tracts 39, 42 and 43, T.11N., R.21E., SBBM, San Bernardino Co.

DECOMPOSED GRANITE:

Secs. 11 (S. of U. S. Hwy. 60–70), 13 and 15, T.6S., R.12E., SBBM, Riverside Co.

DECORATIVE AND DIMENSION STONE:

N½ Sec. 13, T.8N., R.4E., SBBM, San Bernardino Co.
SE¼ Sec. 23, T.6S., R.12E., SBBM, Riverside Co.
Sec. 25, T.6S., R.12E., SBBM, Riverside Co.

[1] Deposits at locations indicated by * are not owned by Southern Pacific.

Amboy Crater (volcanic cinder cone) in Secs. 1 and 2, T.5N., R.11E., SBBM, San Bernardino Co. View towards northeast. (Clyde Sunderland-Oakland)

DOLOMITE:

$S\frac{1}{2}S\frac{1}{2}NE\frac{1}{4}$ and $SE\frac{1}{4}$ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co.
$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 17, $E\frac{1}{2}$ Sec. 19 (association placer claims Piute #2 and #3), $NW\frac{1}{4}$ Sec. 20 (Piute #1), $SW\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}$ and $SW\frac{1}{4}NW\frac{1}{4}$ Sec. 29, $E\frac{1}{2}$ Sec. 30 (Piute #4 and #5), $NW\frac{1}{4}$ Sec. 32 (Piute #7), and $W\frac{1}{2}NW\frac{1}{4}$ Sec. 33, T.8N., R.18E., SBBM, San Bernardino Co.

FELDSPAR:

$S\frac{1}{2}NW\frac{1}{4}NW\frac{1}{4}$ Sec. 29, T.12N., R.1E., SBBM, San Bernardino Co.

FLUORITE:

Sec. 25, T.6S., R.12E., SBBM, Riverside Co.

GYPSUM AND GYPSITE:

Sec. 13, T.3N., R.14E., SBBM, San Bernardino Co.
$W\frac{1}{2}$ Sec. 17, $W\frac{1}{2}$ Sec. 21, $W\frac{1}{2}$ Sec. 29, and $SW\frac{1}{4}$ Sec. 33, T.3N., R.15E., SBBM, San Bernardino Co.

LIMESTONE:

$E\frac{1}{2}$ Sec. 32 (association placer claims Piute #6 and #8), T.8N., R.18E., SBBM, San Bernardino Co.

MICA:

$E\frac{1}{2}$ Sec. 11 and Sec. 13, T.2N., R.3E., SBBM, San Bernardino Co.
$SE\frac{1}{4}$ Sec. 17, T.3N., R.16E., SBBM, San Bernardino
$NW\frac{1}{4}SW\frac{1}{4}$ Sec. 9, T.3S., R.6E., SBBM, Riverside Co.

SAND AND GRAVEL:

$NW\frac{1}{4}NE\frac{1}{4}$ Sec. 17, T.4N., R.12E., SBBM, San Bernardino Co.
$S\frac{1}{2}$ and $NW\frac{1}{4}$ Sec. 13, T.8N., R.4E., SBBM, San Bernardino Co.
$NW\frac{1}{4}$ Sec. 25, T.8N., R.5E., SBBM, San Bernardino Co.
Sec. 13, T.9N., R.7E., SBBM, San Bernardino Co.
Sec. 13, T.4S., R.7E., SBBM, Riverside Co.
Sec. 35, T.6S., R.9E., SBBM, Riverside Co.
Secs. 23, 25, and 35, T.6S., R.10E., SBBM, Riverside Co.
Sec. 29 and $S\frac{1}{2}NE\frac{1}{4}$ and $N\frac{1}{2}SE\frac{1}{4}$ Sec. 30, T.9S., R.13E., SBBM, Imperial Co.
$SE\frac{1}{4}$ Sec. 3 and $NW\frac{1}{4}$ Sec. 11, T.12S., R.16E., SBBM, Imperial Co.

VOLCANIC CINDERS:

$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 1, T.5N., R.11E., SBBM, San Bernardino Co.
$SW\frac{1}{4}$ Sec. 29, T.8N., R.6E., SBBM, San Bernardino Co.

WOLLASTONITE:

$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 13, T.11N., R.1E., SBBM, San Bernardino Co.

ABRASIVES

MINES AND PROSPECTS

Location: *$NW\frac{1}{4}$ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co. (1)

Description: garnet produced for abrasives

Geology: tactite up to 300′ long and 100′ wide contains up to 90% garnet; in Paleozoic rocks

OCCURRENCES

Location: *SE¼ Sec. 31, T.7N., R.4E., SBBM, San Bernardino Co. (1)

Geology: roughly circular outcrop of tactite about 500′ in diameter is composed of estimated 10% garnet

BARITE [$BaSO_4$]

MINES AND PROSPECTS

Name: Hansen

Location: *NE¼ Sec. 36, T.8N., R.7E., SBBM, San Bernardino Co. (8,38)

Description: 60 carloads of barite averaging 4.25 specific gravity reportedly produced prior to 1930 from 250′ adit

Geology: barite with hematite in several NW-trending veins a few inches to 11 feet wide in volcanic rocks

Location: *N½NW¼NE¼SE¼ Sec. 15, T.9N., R.21E., SBBM, San Bernardino Co. (1)

Description: 40′ adit and 75′ trench

Geology: barite and quartz vein 1½-2′ wide strikes N75°W, dips 45°NE, flattening to 20° at 10′ depth; in red conglomerate; other minor veins and stockworks nearby

Name: Leviathon

Location: *E½NE¼NE¼ Sec. 8 and W½NW¼NW¼ Sec. 9, T.10N., R.1E., SBBM, San Bernardino Co.
(See under METALLICS, Silver)

Name: Ball

Location: *SE¼ Sec. 8, T.11N., R.1E., SBBM, San Bernardino Co. (8,28)

Description: cuts and shallow shafts; specific gravity ranges from 4.22–4.33; reported to be of chemical grade

Geology: veins of white barite up to 6′ wide, occur in calcite and irregular masses of marble

Location: *NE¼ Sec. 33, T.11N., R.10E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: barite vein 1–6′ wide strikes N, dips W in metavolcanic rocks

OCCURRENCES

Location: *Sec. 36, T.7N., R.8E., SBBM, San Bernardino Co. (1)

Geology: barite veins to 3′ wide and several hundred feet long strike NW in brecciated andesite

BORON [B]

MINES AND PROSPECTS

Location: NE¼ Sec. 9 (except patented claim), T.8N., R.1E., SBBM, San Bernardino Co. (1,38)

Description: pit

Geology: colemanite shale beds of Barstow fm. on strike with Columbus borate mine in Sec. 10

Conclusions: shows little promise

Name: Columbus (*Gem*)

Location: *NW¼ Sec. 10, T.8N., R.1E., SBBM, San Bernardino Co. (1,38)

Description: worked around 1900 from 150′ shaft with drifts at 50′ and 100′ levels; other shallow pits and short adits; borate shale mined contained 8–30% anhydrous boric acid

Geology: colemanite shale beds with minor amounts of sandstone, limestone, and conglomerate in Barstow fm.

Name: Western

Location: *E½ Sec. 22, T.10N., R.1E., SBBM, San Bernardino Co. (38)

Description: about 500 tons of 75% boric acid produced prior to 1907; 200′ incline shaft; average ore contained 10% anhydrous boric acid

Geology: 25–30′ thickness of colemanite-bearing siltstone, sandstone, and shale of Barstow fm. strikes NE, dips 30°NW; contains stringers of howlite, celestite and gypsum

Name: Pacific Coast Borax

Location: *Secs. 23 and 24, T.10N., R.1E., and Secs. 18, 19, and 20, T.10N., R.2E., SBBM, San Bernardino Co. (1,24,38)

Description: colemanite-bearing rock, averaging about 15–20% anhydrous boric acid, worked 1884–1907; mined from extensive underground workings to 500′ depth

Geology: colemanite-bearing material in irregular pods 7–10′ thick within 50′ shale section of Barstow fm.; shale strikes W, dips moderately to steeply S

Location: NW¼NW¼, SW¼NW¼ and NE¼NW¼ Sec. 25, T.10N., R.1E., SBBM, San Bernardino Co. (1)

Description: pits; 1956 analyses ranged from 7.2–24.1% anhydrous boric acid

Geology: sedimentary rocks of the Barstow fm.

Conclusions: shows limited promise; may contain colemanite-bearing beds at depth

Name: Union Borax

Location: *S½NE¼NE¼ Sec. 19 and W½W½NW¼ Sec. 20, T.10N., R.2E., SBBM, San Bernardino Co. (1,38)

Description: 640′ shaft; active 1919–20

Geology: colemanite-bearing sedimentary rocks of the Barstow fm.

Name: Palm (*Blumenberg*)

Location: *Secs. 19, 20, 29 and 30, T.10N., R.2E., SBBM, San Bernardino Co. (1,38)

Description: shale containing 5–8% anhydrous boric acid mined from main workings in $S\frac{1}{2}S\frac{1}{2}$ Sec. 29, caved adits; operated about 1907

Geology: colemanite-bearing shales of the Barstow fm.

Name: Centennial

Location: *$SE\frac{1}{4}SE\frac{1}{4}NE\frac{1}{4}$ Sec. 30, T.10N., R.2E., SBBM, San Bernardino Co. (1,38)

Description: produced 600–700 tons of colemanite from several open pits and minor underground workings

Geology: irregular lumps of colemanite in chalky white howlite(?) matrix in black shale of the Barstow fm.

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (2,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); potential daily yield calculated at 11.22 short tons of borax based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: complex chloride brine from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

OCCURRENCES

Location: $SE\frac{1}{4}$ Sec. 5, T.11N., R.4E., SBBM, San Bernardino Co. (1)

Geology: colemanite float

Conclusions: shows little promise

TRENDS

Location: Secs. 9, 13, 21, 25, 29 and 33, T.8N., R.4E., SBBM, San Bernardino Co. (1)

Geology: geologic potential for borate-bearing beds in subsurface Barstow fm. which contains borate about 12 miles to the west

BROKEN STONE

MINES AND PROSPECTS

Name: Rattlesnake Gulch

Location: *Sec. 27 and $E\frac{1}{2}$ Sec. 28, T.2N., R.3E., SBBM, San Bernardino Co. (38)

Description: first worked 1951; 40 tons per week produced in 1952 for roofing granules

Geology: white, massive Carboniferous Furnace limestone strikes N30–40°W, dips 35°NE

Name: Brubaker-Mann

Location: *$NE\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 4 and $SW\frac{1}{4}NE\frac{1}{4}NE\frac{1}{4}$ Sec. 9, T.8N., R.3E., SBBM, San Bernardino Co. (1)

Description: red rock roofing granule quarries; worked intermittently

Geology: red andesite

Location: Sec. 29, T.8N., R.7E., SBBM, San Bernardino Co. (1)

Description: about 1,000 tons of chalcedony mined from pits

Geology: chalcedonic replacements of tuff and clay beds associated with celestite deposits

Conclusions: source of colored rock for possible use as roofing granules

Location: *NE¼NE¼ Sec. 11, T.8N., R.15E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone)

Location: SW¼ Sec. 17, T.8N., R.22E., SBBM, San Bernardino Co. (1)

Description: two small quarries supplied small amount of riprap for dikes along Colorado River

Geology: meta-igneous rocks

Conclusions: shows little promise

Location: *NE¼SE¼SW¼ Sec. 18, T.8N., R.22E., SBBM, San Bernardino Co. (1)

Description: quarry supplied riprap for dikes along Colorado River

Geology: gneiss

Location: *W½W½NW¼ Sec. 32, T.9N., R.3E., SBBM, San Bernardino Co. (1)

Description: two railroad ballast quarries

Geology: andesite

Location: *NE¼SW¼ Sec. 30, T.10N., R.1E., SBBM, San Bernardino Co. (1)

Description: small quarries

Geology: mostly highly colored porphyritic andesite to latite

Location: *N½ Sec. 7, T.10N., R.22E., SBBM, San Bernardino Co. (1)

Description: two quarries supplied riprap for use in dikes and levees along Colorado River

Geology: diorite gneiss

Location: *NW¼SW¼ Sec. 29, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: pink, medium-grained granite

Location: *E½SW¼ Sec. 21, T.11N., R.21E., SBBM, San Bernardino Co. (1)

Description: quarry supplied riprap for dikes and levees along Colorado River

Geology: gneissic granite

Location: *Secs. 22, 23, 27 and 34, T.12N., R.5E., SBBM, San Bernardino Co. (1)

Description: pits; roofing granules produced

Geology: green chert

Location: SW¼NW¼ Sec. 35, T.12N., R.6E., SBBM, San Bernardino Co. (1)

Description: over 13,000 tons of riprap surficially mined for use in highway construction

Geology: coarse alluvial fan and talus deposits of gneissoid granitic rocks

Conclusions: source of riprap and broken stone

Location: Sec. 9, T.2S., R.5E., SBBM, Riverside Co. (1)

Description: cut

Geology: marble lens in gneiss

Conclusions: limited promise for landscape stone and roofing granules

Location: *NW¼ Sec. 27, T.12S., R.20E., SBBM, Imperial Co. (1)

Description: small quarry and crushing plant

Geology: scoriaceous basalt

OCCURRENCES

Location: SW¼ Sec. 13, T.7N., R.2E., SBBM, San Bernardino Co. (1)

Geology: large white quartz latite boss consists mostly of quartz and feldspar

Conclusions: possible source of roofing granule material

Location: SE¼NE¼SW¼ Sec. 17, T.8N., R.1E., SBBM, San Bernardino Co. (1)

Geology: fine-grained variety of pink granite

Conclusions: shows little promise; may be suitable for use as roofing granules

Location: *W½ Sec. 3, Secs. 4, 7, and 8, and NE¼ Sec. 18, T.8N., R.2E., SBBM, San Bernardino Co. (1)

Geology: pink granite

Location: S½S½ Sec. 5, W½ and SE¼ Sec. 9, and N½ Sec. 17, T.8N., R.2E., SBBM, San Bernardino Co. (1)

Geology: pink granite

Conclusions: shows limited promise

Location: *E½ Sec. 10 and Sec. 11, T.9N., R.18E., SBBM, San Bernardino Co. (1)

Geology: basalt

Location: SE¼NW¼ and SW¼NE¼ Sec. 25, T.10N., R.1E., SBBM, San Bernardino Co. (1)

Geology: highly colored andesite porphyry and latite

Conclusions: potential source of roofing granules

Location: *W½ Sec. 36, T.10N., R.18E., SBBM, San Bernardino Co. (1)

Geology: basalt butte

Location: W½SW¼SW¼ Sec. 33, T.11N., R.1E., SBBM, San Bernardino Co. (1)

Geology: green to white tuff

Conclusions: potential source of roofing granules

Location: NW¼NW¼ Sec. 7, T.11N., R.4E., SBBM, San Bernardino Co. (1)

Geology: two outcrops of yellow, brown, red, and black jasper are 75′ by 50′ by 2–4′ thick and 30′ by 10′ by 1–2′ thick

Conclusions: shows little promise

Location: S½SW¼ Sec. 23 and E½W½ Sec. 25, T.3S., R.3E., SBBM, Riverside Co. (1)

Geology: two outcrops of dolomitic calcite marble contain about 20% aplite, pegmatite, and schist, and an estimated 8½ million short tons of marble

Conclusions: potentially useful as ornamental stone or roofing granules

CARBON DIOXIDE [CO_2]

MINES AND PROSPECTS

Name: Imperial Carbon Dioxide Gas Field (*portion*)

Location: *Secs. 1, 2, 12, 13, and 14, T.11S., R.13E., SBBM, Imperial Co. (1,20)

Description: from 1934–54, entire field (includes Secs. 3 and 11 listed below) produced approximately 2½ billion cu. ft. of CO_2 from more than 100 wells drilled to maximum depth of 860′; well life averaged 1–2 years as wells eventually became plugged with carbonate deposits and sand; encroachment of water from Salton Sea was largely responsible for abandonment of the field

Geology: volcanic gas along San Andreas fault system; mud pots and mud volcanoes mark favorable NW-trending area

Name: Imperial Carbon Dioxide Gas Field (*portion*)

Location: Secs. 3 and 11, T.11S., R.13E., SBBM, Imperial Co. (1,20)

Description: from Jan. 1941 to Apr. 1954, 1,173,583,000 cu. ft. of CO_2 gas was produced from about 60 wells to 860′ deep; the gas was converted to 69,780 short tons of dry ice and liquid CO_2 at an average rate of 16,200 cu. ft. of gas to one ton of solid or liquid; for annual production, see Figure 4 on next page

Geology: (see above listing)

Conclusions: known reserves of carbon dioxide

CLAYS

MINES AND PROSPECTS

Name: Siberia

Location: *Sec. 4, T.6N., R.9E., SBBM, San Bernardino Co. (28,38)

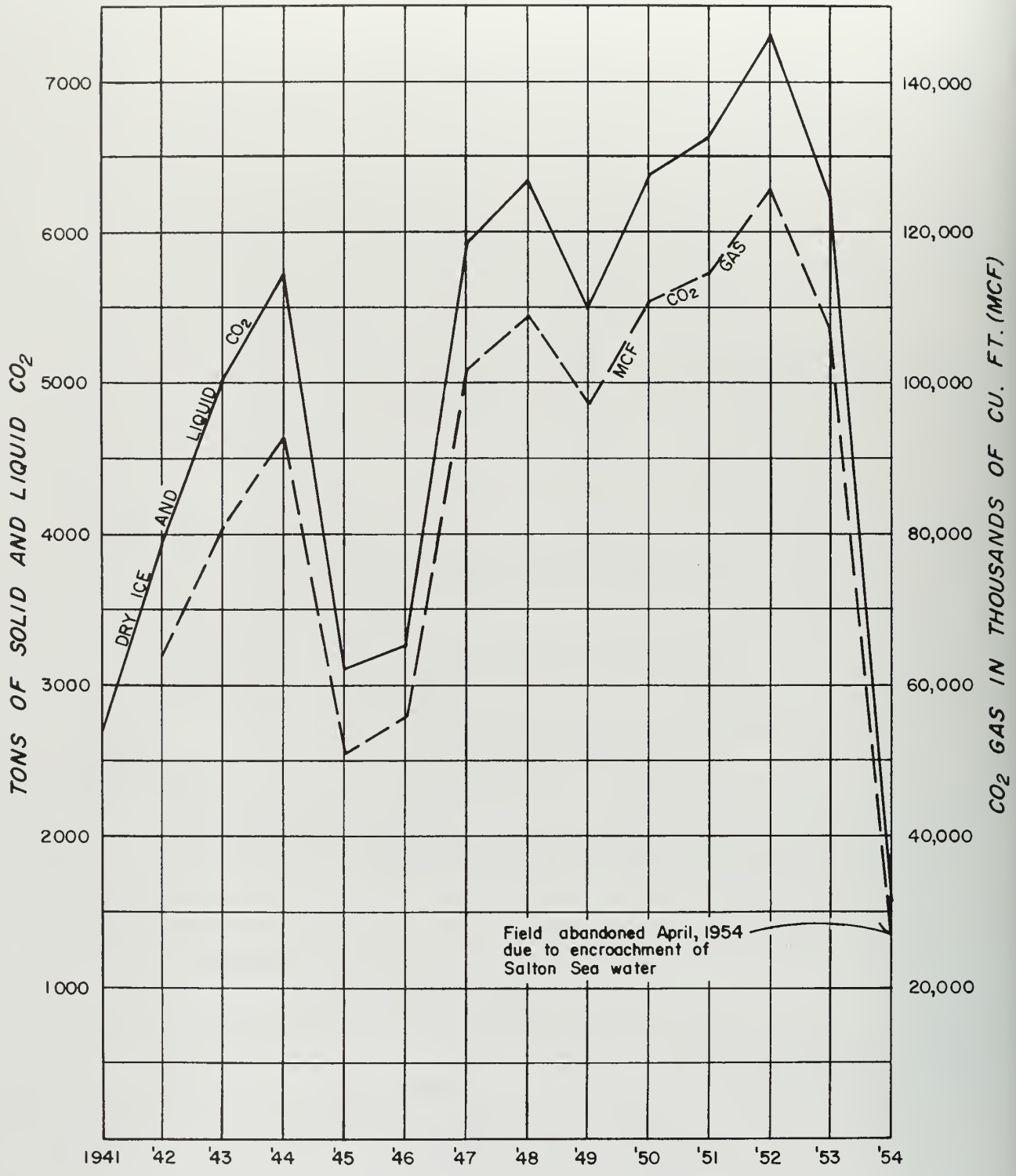
Description: cuts and shallow shafts

Geology: clay beds 50–100′ thick

Location: *Secs. 22, 23 and 26, T.6N., R.14E., SBBM, San Bernardino Co. (1)

Description: small amounts of bentonite produced for cosmetic industry from shallow cuts and trenches

Geology: bentonite lenses in altered rhyolitic tuff



ANNUAL PRODUCTION OF CARBON DIOXIDE

from

Secs. 3 & 11, Twp. 11S., Rge. 13E., S B B M

Imperial County, California

Figure 4

SOUTHERN PACIFIC
LAND DEPARTMENT

Location: *SW¼ Sec. 19, T.7N., R.9E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: silty clay beds to 15′ thick may be suitable for structural purposes

Location: *NE¼ Sec. 34, T.7N., R.9E., SBBM, San Bernardino Co. (1)

Description: trenches and 25′ drill hole

Geology: bentonitic clay formed by alteration of tuff

Name: Hector Bentonite Deposits (*North Group, South Group, Ewrite, and Inerto*)

Location: *E½ Sec. 1, T.8N., R.4E., Secs. 6, 26, 27 and 35, T.8N., R.5E., and Sec. 31, T.9N., R.5E., SBBM, San Bernardino Co. (1,27,38)

Description: probably more than 50,000 tons produced since 1931, about 300 tons per year from Inerto mine 1946–53 from incline to 60′ depth; series of inclined shafts to 200′ depth at South Group; pits, shafts, trenches at North Group

Geology: beds of hectorite (magnesium-rich bentonite) 6–40′ thick subjacent to 12–15′ of basalt at South Group; contains up to 60% calcite, dolomite or other impurities

Location: *NW¼ Sec. 11, T.9N., R.4E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 12′ thick, impure, montmorillonite clay deposit formed from alteration of volcanic ash

Location: NW¼ Sec. 25, T.9N., R.4E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: 2′ thick deposit of reddish bentonitic clay strikes N40°E, dips steeply E

Conclusions: shows little promise

Location: *S½NW¼SE¼ Sec. 14, T.10N., R.2E., SBBM, San Bernardino Co. (38)

Description: cuts, 20′ shaft, 30′ adit

Geology: 4′ bentonite bed in tuffaceous lake sediments of the Barstow fm.

Name: Bomber Moon

Location: *SE¼SW¼SE¼ Sec. 17, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: two shafts

Geology: green bentonite

Location: *SE¼SE¼NW¼ Sec. 20, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: 15′ trench and several pits

Geology: green bentonite with some sand lenses in Barstow fm.

Location: E½ Sec. 21, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: many pits and a 30′ incline shaft

Geology: poor quality montmorillonite and illite clay beds in Barstow fm.

Conclusions: shows little promise

Name: Barrett (*Gunn*)

Location: *$E\frac{1}{2}E\frac{1}{2}NW\frac{1}{4}$ Sec. 22, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: 500′ trench, 5–20′ deep; stockpiling in 1956

Geology: 15′ bentonite (montmorillonite) beds broken by many minor faults; beds strike NE, in Barstow fm.

Location: *$NW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$ and $N\frac{1}{2}NW\frac{1}{4}SE\frac{1}{4}$ Sec. 25, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: several pits

Geology: clay in Barstow fm.

Location: *$W\frac{1}{2}SE\frac{1}{4}NW\frac{1}{4}$ Sec. 26, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: several pits and inclined shafts

Geology: 40′ of greenish gray clays in Barstow fm. strike N60°E, dip 55–70°N

Location: *$E\frac{1}{2}SE\frac{1}{4}NW\frac{1}{4}$ Sec. 21 and $S\frac{1}{2}NW\frac{1}{4}NE\frac{1}{4}$ Sec. 28, T.10N., R.3E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: partly altered slightly bentonitic volcanic ash in Barstow fm.

Name: Stacsite

Location: *$SE\frac{1}{4}$ Sec. 20, T.10N., R.4E., SBBM, San Bernardino Co. (1)

Description: several truck loads produced in 1958 from pit

Geology: impure montmorillonite clay deposit formed by alteration of tuff

Location: *$NW\frac{1}{4}$ Sec. 19, T.11N., R.17E., SBBM, San Bernardino Co. (1)

Description: several pits and an adit

Geology: bentonitic rhyolite tuff beds strike NNW, dip 25°E

Name: Cronese Mud

Location: *Secs. 13 and 24, T.12N., R.6E., and Secs. 18 and 19, T.12N., R.7E., SBBM, San Bernardino Co. (38)

Description: impermeable clay for canal and reservoir lining produced from open pits

Geology: playa clay deposits

Name: Red Top

Location: *Secs. 20 and 21, T.6S., R.9E., SBBM, Riverside Co. (1,29)

Description: short adits and cuts

Geology: clayey fault gouge developed along San Andreas fault

Location: *Sec. 24, T.12S., R.19E., SBBM, Imperial Co. (21)

Description: pits and 70′ adit

Geology: white clay deposit 200′ long and 100′ thick beneath quartzite

OCCURRENCES

Location: E½ Sec. 25, T.7N., R.8E., SBBM, San Bernardino Co. (1)

Geology: silty clay in beds to 15′ thick; contains interbedded gravel

Conclusions: possible source of material for structural clay products

Location: W½ Sec. 1, T.7N., R.23E., SBBM, San Bernardino Co. (1)

Geology: montmorillonite to 10′ thick with minor amounts of interbedded siltstone and sandstone in the Chemehuevis lake beds; locally overlain by several feet of coarse alluvial fan gravels

Conclusions: source of material for structural clay products

Location: Secs. 17, 21 and 29, T.10N., R.22E., and Tracts 39, 42 and 43, T.11N., R.21E., SBBM, San Bernardino Co. (1)

Geology: montmorillonite in beds 2–3′ thick, locally 20′ thick, with minor amounts of interbedded siltstone and sandstone in Chemehuevis lake beds locally overlain by gravels

Conclusions: source of material for structural clay products

TRENDS

Location: W½ Sec. 13, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Geology: may contain bentonite beneath gravel and sand

DECOMPOSED GRANITE

OCCURRENCES

Location: Secs. 11 (S. of U. S. Hwy. 60–70), 13 and 15, T.6S., R.12E., SBBM, Riverside Co. (1)

Geology: coarse-grained quartz diorite to granite gruss

Conclusions: a source of construction material

DECORATIVE AND DIMENSION STONE

MINES AND PROSPECTS

Name: Onyx

Location: *NW¼SE¼NE¼ Sec. 8, T.1N., R.3E., SBBM, San Bernardino Co. (1)

Description: worked 1927

Geology: marble, aragonite and onyx in the Furnace limestone; onyx in beds 1–4′ thick

Name: Vaughn Marble

Location: *SE¼ Sec. 2 and NE¼ Sec. 11, T.5N., R.14E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone)

Location: *Sec. 21, T.8N., R.5E., SBBM, San Bernardino Co. (1)

Description: occasional truck load shipped for use as landscape stone or facing

Geology: slabby, vesicular basalt

Location: *$NE\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$ Sec. 17 and $NE\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 18, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: dimension-stone quarry

Geology: porphyritic andesite and latite

OCCURRENCES

Location: *$W\frac{1}{2}$ Sec. 3, Secs. 4, 7, and 8, and $NE\frac{1}{4}$ Sec. 18, T.8N., R.2E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Broken Stone)

Location: $S\frac{1}{2}S\frac{1}{2}$ Sec. 5, $W\frac{1}{2}$ and $SE\frac{1}{4}$ Sec. 9, and $N\frac{1}{2}$ Sec. 17, T.8N., R.2E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Broken Stone)

Conclusions: shows limited promise

Location: $N\frac{1}{2}$ Sec. 13, T.8N., R.4E., SBBM, San Bernardino Co. (1)

Geology: vesicular basalt similar to that shipped from Sec. 21, T.8N., R.5E.

Conclusions: source of landscape and facing stone favorably located with respect to highway and railroad

Location: Sec. 31, T.3S., R.8E., SBBM, Riverside Co. (1)

Geology: millions of cubic yards of felsic granite, locally porphyritic; well jointed

Conclusions: shows limited promise for decorative and dimension stone, readily accessible and easily quarried

Location: $SE\frac{1}{4}$ Sec. 23, T.6S., R.12E., SBBM, Riverside Co. (1)

Geology: estimated 300,000 cu. yds. of highly colored sandstone mottled with iron oxide; composes a dip slope of 40–55°; sandstone is up to 15′ thick

Conclusions: source of ornamental and dimension stone, readily accessible and easily quarried

Location: Sec. 25, T.6S., R.12E., SBBM, Riverside Co. (1)

Geology: estimated 200,000 cu. yds. in several outcrops of highly colored sandstone mottled with iron oxide; sandstone is up to 15′ thick

Conclusions: source of ornamental and dimension stone, readily accessible and easily quarried

DOLOMITE [$CaMg(CO_3)_2$]

MINES AND PROSPECTS

Name: Chalmers

Location: *$NW\frac{1}{4}$ Sec. 29, T.6N., R.13E., SBBM, San Bernardino Co. (28)

Description: estimated 1,000,000 tons of dolomitic marble; representative sample analyzed 60.10% $CaCO_3$, 38.12% $MgCO_3$, 0.36% Al_2O_3, 0.20% Fe_2O_3, and 46.5% LOI

Geology: Paleozoic dolomite

Name: Chubbuck Reserve

Location: *$S\frac{1}{2}$ Sec. 17, $N\frac{1}{2}$ Sec. 20, and $NW\frac{1}{4}$ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone)

Location: $SW\frac{1}{4}SW\frac{1}{4}$ Sec. 17, $E\frac{1}{2}$ Sec. 19 (association placer claims Piute #2 and #3), $NW\frac{1}{4}$ Sec. 20 (Piute #1), $SW\frac{1}{4}$, $SW\frac{1}{4}SE\frac{1}{4}$ and $SW\frac{1}{4}NW\frac{1}{4}$ Sec. 29, $E\frac{1}{2}$ Sec. 30 (Piute #4 and #5), $NW\frac{1}{4}$ Sec. 32 (Piute #7), and $W\frac{1}{2}NW\frac{1}{4}$ Sec. 33, T.8N., R.18E., SBBM, San Bernardino Co. (1)
Description: pits; tens of millions of tons of dolomite marble above stream level; representative samples analysed 42–46% $MgCO_3$, 53–56% $CaCO_3$, 0.4–3.34% SiO_2, 0.11–0.52% Fe_2O_3, 0.08–0.22% Al_2O_3, trace to 0.01% P_2O_5 and 43.92–46.95% LOI

Geology: massive to thin-bedded, light bluish-gray to brown dolomite marble with some siliceous calcite marble; strikes N, dips steeply E; unit ranges from 500′ to over 1000′ thick

Conclusions: large volume of dolomite, easily quarried

OCCURRENCES

Location: *$NE\frac{1}{4}$ Sec. 14, Sec. 15, and $SE\frac{1}{4}$ Sec. 16, T.5N., R.15E., SBBM, San Bernardino Co. (1)

Geology: Cambrian dolomite with some limestone and chert strikes NE, dips 60°SE

Location: Sec. 25, T.6N., R.12E., SBBM, San Bernardino Co. (1)

Geology: large deposits of dolomite marble with some intrusive rocks; sample assayed 43% $MgCO_3$ and 32.7% $CaCO_3$

Conclusions: shows little promise

Location: *Secs. 19, 30, 31, and 32, T.6N., R.13E., SBBM, San Bernardino Co. (1)

Geology: extensive deposits of Paleozoic limestone and dolomite marble

Location: $S\frac{1}{2}S\frac{1}{2}NE\frac{1}{4}$ and $SE\frac{1}{4}$ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co. (1)

Geology: an estimated 75,000,000 tons of finely crystalline gray dolomite of Paleozoic age; sample analysed 53% $CaCO_3$, 45% $MgCO_3$, 0.90% SiO_2, 0.66% Fe_2O_3, 0.35% Al_2O_3, and 45.50% LOI

Conclusions: warrants further investigation

FELDSPAR

MINES AND PROSPECTS

Name: McKnight Cornishstone

Location: *$S\frac{1}{2}SW\frac{1}{4}NE\frac{1}{4}$ Sec. 16, T.7N., R.2E., SBBM, San Bernardino Co. (1,24,28,38)

Description: shallow pit

Geology: small body of white, dense quartz latite in granitic rocks

Location: *NE¼SW¼ Sec. 27, T.12N., R.5E., SBBM, San Bernardino Co. (1)

Description: a few tons mined

Geology: white feldspar crystals in pegmatite outcrop

OCCURRENCES

Location: W½W½NE¼ Sec. 9, T.6N., R.1E., SBBM, San Bernardino Co. (1)

Geology: feldspar and quartz in pegmatite plugs in meta-igneous complex

Conclusions: shows little promise

Location: SW¼ Sec. 13, T.7N., R.2E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Broken Stone)

Conclusions: possible source of ceramic material

Location: S½NW¼NW¼ Sec. 29, T.12N., R.1E., SBBM, San Bernardino Co. (1)

Geology: pegmatite 800′ long and 500′ wide in diorite; contains estimated 60–70% feldspar and 30–40% quartz

Conclusions: warrants additional investigation as a source of ceramic-grade feldspar

FLUORITE [CaF_2]

MINES AND PROSPECTS

Name: Green Hornet

Location: *W½SW¼ Sec. 8, T.6N., R.1E., SBBM, San Bernardino Co. (1,28,38)

Description: 80′ shaft and 170′ of drifts

Geology: irregular masses of fluorspar in five parallel quartz veins 4–6′ thick that strike W and dip 80°S in hornblende diorite

Name: Hope

Location: *S½NE¼SW¼ Sec. 18, T.6N., R.13E., SBBM, San Bernardino Co.
(See under METALLICS, Uranium, Thorium, and Rare Earths)

Name: Big Horn

Location: *SW¼SE¼NW¼ Sec. 29, T.9N., R.14E., SBBM, San Bernardino Co.
(See under METALLICS, Gold)

Name: Big Horn (*Afton Canyon District*)

Location: *Sec. 4, T.10N., R.6E., SBBM, San Bernardino Co. (1,19)

Description: cut and adit total 50′ long

Geology: fluorite lens to 3′ wide associated with calcite and quartz; fills fault fissure which strikes NE, dips 50–65°SE in andesite and basalt

Location: $S\frac{1}{2}S\frac{1}{2}$ Sec. 13, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Description: 130′ adit, shallow shafts and pits

Geology: small lenses of fluorite to 4′ wide in NE-trending shear zone in marble near diorite porphyry dikes; selected samples analysed 13.2–60.0% CaF_2 and 36.8–72.85% SiO_2

Conclusions: shows little promise

Name: Afton Canyon (*Randall, Masson, Fluorite Hill*)

Location: *Secs. 31, 32, and 33, T.11N., R.6E., SBBM, San Bernardino Co. (19,38)

Description: shafts to 50′ and 150′ depths

Geology: fluorspar, quartz, calcite, and siderite in veins in andesite and basalt; veins a few inches to four feet wide, widest along contact of andesite and granite; veins commonly strike NE and are nearly vertical

Location: Sec. 25, T.6S., R.12E., SBBM, Riverside Co. (1,4)

Description: estimated 400 tons of 75% CaF_2 mined from incline to 50′ level and 180′ of trenches; numerous pits; estimated 300 tons in ore dumps; 20 lb. sample of dump assayed 70% CaF_2, 20.6% $CaCO_3$, and 3.11% SiO_2; weighted average of four channel samples averaging 24″ wide taken in shaft and 50′ level is 84% CaF_2; weighted average of four channel samples averaging 41″ wide is 82% CaF_2

Geology: nearly pure, botryoidal fluorite fills fault fissures in quartz monzonite; main vein is to 5′ wide, strikes northeasterly, dips 38–60°SE, and crops out discontinuously for 855′; at least four other veins in footwall

Conclusions: source of high-grade fluorite; warrants further exploration

OCCURRENCES

Location: *$NE\frac{1}{4}$ Sec. 6, T.8N., R.14E., SBBM, San Bernardino Co. (1)

Geology: stringers and pods of fluorite up to 18″ thick in andesite

GYPSUM AND GYPSITE [$CaSO_4 \cdot 2H_2O$]

MINES AND PROSPECTS

Name: Amboy Deposits

Location: *Secs. 3 and 10, T.5N., R.12E., SBBM, San Bernardino Co. (1,38)

Description: gypsum produced from cuts to water table (6–8′ depth) 1906–24

Geology: selenite crystal mesh with intermixed playa clay

Location: *Secs. 8 and 17, T.5N., R.12E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: 6′ bed of 60% cellular gypsum at surface of playa

OCCURRENCES

Location: Secs. 1, 9, 13, and $S\frac{1}{2}$ Sec. 23, T.2N., R.15E., and $N\frac{1}{2}$ and $SW\frac{1}{4}$ Sec. 17 and $NW\frac{1}{4}$ Sec. 19, T.2N., R.16E., SBBM, San Bernardino Co. (1)

Geology: large areas of lacustrine gypsum (generally selenite crystal mesh) with admixed clay, silt, celestite ($SrSO_4$) concretions and halite exposed in bands up to ¼ mile wide along margins of Cadiz Dry Lake; gypsum beds 1–5′ thick; samples from the W margin analyzed from 50% gypsum in NE¼ Sec. 9 to 80% in SE¼ Sec. 23, and in the E margin from 71–90% in Sec. 19; all averaged 1–10% strontium by spectrographic analyses; at least 1,000,000 tons, assuming 50% gypsum and a 3′ thickness in Secs. 1, 9, 23 and 19; Sec. 13 has potential for gypsum at shallow depths

Conclusions: shows limited promise

Location: Sec. 13, T.3N., R.14E., SBBM, San Bernardino Co. (1)

Geology: extensive outcrops of lacustrine gypsum in Cadiz Dry Lake with minor amounts of clay and silt ranging from a few inches to over 5′ thick; the gypsum generally occurs as a mesh of light brown selenite crystals associated with small irregular concretions of celestite ($SrSO_4$); selected sample from the NE¼NE¼NE¼ analysed 84.36% gypsum; other beds of gypsum may occur at depth; estimated at least 2,750,000 tons, assuming 50% gypsum and a 3′ thickness

Conclusions: warrants further investigation

Location: W½ Sec. 17, W½ Sec. 21, W½ Sec. 29, and SW¼ Sec. 33, T.3N., R.15E., SBBM, San Bernardino Co. (1)

Geology: lacustrine gypsum with minor amounts of clay and silt ranging from a few inches to over 5′ thick crops out as a mesh of light brown selenite crystals; selected samples analysed 2.93–47.9% gypsum; other beds of gypsum may occur at depth; an estimated 1900 tons of gypsum per acre foot may be present in the upper few feet of the lakebeds

Conclusions: warrants further investigation

LIMESTONE [$CaCO_3$]

MINES AND PROSPECTS

Name: Chubbuck Lime Co. (*White Mountain Lime Co.*)

Location: *S½ Sec. 10, SW¼ Sec. 11, Sec. 15, E½ and SW¼ Sec. 16, and N½ Sec. 22, T.3N., R.16E., SBBM, San Bernardino Co. (1,18,28,38)

Description: about 500,000 tons produced from four quarries; main quarry in W½SE¼ Sec. 15 is 500–600′ long, 150–200′ wide, and 30′ deep; worked 1925–48, 1949–51; about 2/3 production was calcined, remainder crushed for use as whiting, poultry grit, and foundry rock

Geology: unit 500–600′ thick consists of marble, quartzite, and mica schist

Name: Vaughn Marble

Location: *SE¼ Sec. 2 and NE¼ Sec. 11, T.5N., R.14E., SBBM, San Bernardino Co. (1,18)

Description: about 135 tons produced from quarries in 1939, for building and monument stone

Geology: highly colored and variegated Cambrian marble: Chambless limestone in Sec. 11, and Bonanza King dolomitic limestone in Sec. 2

Name: Chubbuck Reserve

Location: *S½ Sec. 17, N½ Sec. 20, and NW¼ Sec. 21, T.6N., R.14E., SBBM, San Bernardino Co. (1,18,28,38)

Description: 2000 tons dolomite shipped in 1943 from small quarry and 106′ test adit; estimated 100,000,000 tons limestone and dolomite available; samples analyzed 98% $CaCO_3$, 0.5–1.7% SiO_2, 0.08–0.4% MgO, 0–0.15% Fe, 0–0.28% Al_2O_3, 43.61% LOI; dolomite sample analyzed 55% $CaCO_3$, 44% $MgCO_3$, 0.60% SiO_2, and 0.50% Fe and Al_2O_3

Geology: beds of dolomite and white and blue Paleozoic limestone strike N65°E, dip 45°S to 80°N; forms ridge 700′ high

Location: *NE¼NE¼ Sec. 11, T.8N., R.15E., SBBM, San Bernardino Co. (1)

Description: shallow pit; five tons shipped 1951 on trial basis

Geology: marble

Location: E½ Sec. 32 (association placer claims Piute #6 and #8), T.8N., R.18E., SBBM, San Bernardino Co. (1)

Description: pits; tens of millions of tons of high-calcium marble above stream level; analyses of representative samples average about 98% $CaCO_3$ (99.44% max.), and range from 0–1% $MgCO_3$, 0.06–1% SiO_2, 0.01–0.5% Fe_2O_3, 0–0.05% Al_2O_3, 0–0.08% P_2O_5, and 43.49–47.11 LOI

Geology: massive bedded white to pale blue high-calcium marble strikes N to NW, has variable dip; unit ranges from 500′ to over 1000′ thick

Conclusions: large tonnage of high-calcium marble, easily quarried

Name: Cave Canyon (*Baxter and Ballardie, Evening Star, White Marble*)

Location: *Secs. 12 and NW¼NW¼ Sec. 13, T.11N., R.6E., SBBM, San Bernardino Co. (18)

Description: some marble shipped to sugar refineries in early 1900's; 65,000 tons annual production 1914–16 reported; sample from S½SW¼ Sec. 12 analyzed 97.93% $CaCO_3$, 2.24% SiO_2, and 0.54% $MgCO_3$

Geology: marble in outcrop 4500′ long and several hundred feet wide

OCCURRENCES

Location: *N½ Sec. 25, T.4N., R.16E., SBBM, San Bernardino Co. (1)

Geology: outcrop of white calcite marble and dolomite 2000′ long, up to 1000′ wide and over 200′ high

Location: *SW¼NW¼, N½SW¼, and N½S½SW¼ Sec. 21, T.5N., R.15E., SBBM, San Bernardino Co. (1)

Geology: limestone beds strike NE, dip 50°SE

Name: Jack Frost

Location: *NE¼ Sec. 26, T.6N., R.12E., SBBM, San Bernardino Co. (18)

Geology: crystalline limestone strikes NW, dips 35°NE; deposit is 3000′ by 1200′ by 400′ thick

Location: *Sec. 19, W½ Sec. 29, Secs. 30, 31, and W½ Sec. 32, T.6N., R.13E., SBBM, San Bernardino Co. (1)

Geology: extensive deposits of Paleozoic limestone and dolomite marble

Location: N½NW¼ Sec. 1, T.6N., R.18E., SBBM, San Bernardino Co. (1)

Geology: bed of marble 300′ wide strikes NE, dips steeply NW; one sample analyzed 88.6% $CaCO_3$

Conclusions: shows little promise

Location: E½ and SW¼ Sec. 5, T.7N., R.12E., SBBM, San Bernardino Co. (1)

Geology: calcite and dolomite marble outcrop 3500′ by 600′ by 80–100′ high

Conclusions: shows little promise

Location: *S½ Sec. 34, T.7N., R.13E., SBBM, San Bernardino Co. (1)

Geology: calcite marble deposit 150′ wide and 1500′ long

Location: W½W½ Sec. 29, T.7N., R.19E., SBBM, San Bernardino Co. (1)

Geology: calcite marble, locally dolomitic, 50–400′ thick; strikes NE, dips NW; similar material as in Sec. 30 (see below)

Conclusions: shows little promise

Location: *SE¼ Sec. 30, T.7N., R.19E., SBBM, San Bernardino Co. (1)

Geology: calcite marble, locally dolomitic, 50–400′ thick; strikes NE, dips moderately NW; two samples analyzed 68.6% and 98.2% $CaCO_3$

Location: SE¼, S½NE¼SW¼, SE¼SW¼, and W½NW¼SW¼ Sec. 13, T.11N., R.6E., and W½NW¼ Sec. 19, T.11N., R.7E., SBBM, San Bernardino Co. (1)

Geology: estimated 70 million short tons of marble in outcrop about 3300′ long, 900–1700′ wide and 500′ high in Sec. 13; samples analysed 74.8–91.85% $CaCO_3$, 0.8–6.4% $MgCO_3$, 6.8–7.75% SiO_2, and 0.6–6.95% Fe and Al oxides

Conclusions: shows limited promise

Location: SE¼ Sec. 7, T.9S., R.9E., SBBM, Imperial Co. (1)

Geology: estimated 750,000 tons of marble with inclusions of gneiss and schist forms outcrop about 1800′ long and 100′ thick; analyses of samples varied from 84–95.5% $CaCO_3$, 1.39–4.7% $MgCO_3$, 0.23–5.81% SiO_2, 0.01–0.61% Fe_2O_3, and 0.22–5.67% Al_2O_3

Conclusions: shows little promise

MAGNESITE [$MgCO_3$]

MINES AND PROSPECTS

Name: Needles (*White Moon*)

Location: *S½SE¼SW¼ Sec. 15 and N½NE¼NW¼ and W½NW¼NE¼ Sec. 22, T.8N., R.21E., SBBM, San Bernardino Co. (1,34,38)

Description: numerous trenches 1935 and 1943; one carload shipped 1943; deposit estimated at 117,000–410,000 tons containing maximum of 10% CaO; magnesite lens 2400′ long, 600′ wide, and 12′ thick; analyses range from 21–44% MgO, 0.48–8.5% CaO, up to 6% SiO_2, and generally less than 1% combined Al_2O_3 and Fe_2O_3

Geology: sedimentary magnesite of high purity occurs in shallow basin enclosed by dolomite, tuff, and shale; magnesite is white, fine-grained, highly contorted and fractured

Location: W½SE¼SE¼SW¼ Sec. 21, T.8N., R.21E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: local magnesite beds of limited extent in faulted dolomite and limestone associated with tuff and shale

Conclusions: shows little promise

Location: *NW¼NW¼NE¼ Sec. 28, T.8N., R.21E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: local magnesite beds in faulted dolomite and limestone with associated tuff and shale

Name: Captain

Location: *Sec. 30 and NW¼NW¼NE¼ Sec. 31, T.8N., R.21E., SBBM, San Bernardino Co. (1,34,38)

Description: explored 1943–44 by two shallow inclines, a cut 125′ long and 75′ wide, and a pit; MgO ranges from 44.2–45.3%, CaO from 1.1–3.8%

Geology: similar to Needles deposit; white to brown, thinly laminated beds of magnesite in thin-bedded dolomite; beds strike N20°W, dip 60–70°NE; ore crops out in two parallel bands, each about 8′ thick

Location: Sec. 21, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: 2000′ of drilling, pits and trenches; selected samples analysed 14.15–18.9% MgO and 0.006–0.062% U_3O_8

Geology: 3–14′ thick magnesite bed associated with bentonitic clay

Conclusions: shows little promise

Location: *Sec. 26, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: 1–14′ magnesite beds associated with bentonitic clay in Barstow fm.

Name: Afton Canyon

Location: *SE¼ Sec. 21, T.11N., R.6E., SBBM, San Bernardino Co. (38)

Description: a few carloads shipped 1917–18; developed by short adits; estimated 100,000–200,000 tons of 30% MgO with high lime and silica

Geology: white to pink magnesite in bedded deposit 30–75′ thick crops out for 400–500′

Mica schist deposit on Southern Pacific's Sec. 17, T.3N., R.16E., SBBM, San Bernardino Co.

MICA

MINES AND PROSPECTS

Location: SE¼ Sec. 17, T.3N., R.16E., SBBM, San Bernardino Co. (see photo on facing page) (1)

Description: shallow surface workings produced over 400 tons mica schist 1959–63 for use as plaster additive

Geology: altered zone 10–15′ wide and over 1200′ long, mica (sericite) schist in NE-trending shear zone contains minor amounts of quartz, limonite, hematite, and epidote

Conclusions: source of sericite schist

Location: *SE¼NW¼NE¼ Sec. 20, T.9N., R.19E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: large crystals of muscovite with some quartz in E-W trending zone in granite gneiss; slight copper staining

Location: *N½ Sec. 1, T.11N., R.6E., SBBM, San Bernardino Co. (1)

Description: pits

Geology: mica in 1–1½″ books in pegmatite dikes to 10′ wide

Location: NW¼SW¼ Sec. 9, T.3S., R.6E., SBBM, Riverside Co. (1)

Description: two pits

Geology: estimated 419,000 long tons of impure biotite schist contains approximately 75% biotite, 20% alaskite, and 5% gneiss; an estimated 30% of the mica is vermiculite; biotite schist outcrop is 700′ by 430′ by 30′

Conclusions: shows some promise as a source of vermiculite

OCCURRENCES

Location: E½ Sec. 11 and Sec. 13, T.2N., R.3E., SBBM, San Bernardino Co. (1)

Geology: biotite and phlogopite with some vermiculite in gneissic roof pendants

Conclusions: warrants further investigation

PERLITE

MINES AND PROSPECTS

Location: *NW¼ Sec. 9, T.7N., R.11E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: perlite deposits 40–100′ thick

Name: Rust

Location: *Secs. 32 and 33, T.8N., R.10E., SBBM, San Bernardino Co. (1)

Description: some production about 1952–58 from open pits

Geology: perlite

Location: *$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 14 and $W\frac{1}{2}$ Sec. 24, T.9N., R.8E., SBBM, San Bernardino Co. (1)

Description: pits in Sec. 24

Geology: perlite bed 20–40′ thick, in places overlain by 100–200′ of welded tuff

OCCURRENCES

Location: *Sec. 2, T.7N., R.10E., Secs. 2 and 11, T.8N., R.9E., and Secs. 26, 27, 34, 35, and 36, T.8N., R.10E., SBBM, San Bernardino Co. (1)

Geology: perlite deposits

Location: $NW\frac{1}{4}NW\frac{1}{4}$ Sec. 1, T.7N., R.11E., SBBM, San Bernardino Co. (1)

Geology: 40–50′ thick perlite deposit of doubtful quality and small quantity

Conclusions: shows little promise

Location: $N\frac{1}{2}$ and $SW\frac{1}{4}$ Sec. 5, T.7N., R.11E., SBBM, San Bernardino Co. (1)

Geology: perlite of doubtful quality and limited quantity

Conclusions: shows little promise

Location: $E\frac{1}{2}$ Sec. 25, T.8N., R.9E., SBBM, San Bernardino Co. (1)

Geology: perlite in 800′ by 500′ outcrop

Conclusions: shows little promise

Location: $N\frac{1}{2}$ Sec. 17, T.8N., R.10E., SBBM, San Bernardino Co. (1)

Geology: perlite 10–20′ thick subjacent to welded tuff

Conclusions: shows little promise

Location: *Secs. 18, 30, 31, 32, and 36, T.8N., R.11E., SBBM, San Bernardino Co. (1)

Geology: perlite bodies associated with welded rhyolite tuff

Location: $SW\frac{1}{4}$ Sec. 13, T.9N., R.8E., SBBM, San Bernardino Co. (1)

Geology: perlite bed to 40′ thick, in part overlain by 100–200′ of welded tuff

Conclusions: shows little promise

PUMICE, PUMICITE, TUFF, AND VOLCANIC CINDERS

MINES AND PROSPECTS

Name: Santa Fe

Location: *$SE\frac{1}{4}NE\frac{1}{4}$ Sec. 14, T.5N., R.15E., SBBM, San Bernardino Co. (1,38)

Description: several trenches and pits

Geology: pumicite bed 8–10′ thick in a tuff bed 50′ thick; strikes N, dips 15–20°E; overlain by basalt

Name: Dish Hill

Location: *Sec. 16, T.6N., R.10E., SBBM, San Bernardino Co. (3,38)

Description: quarry

Geology: basaltic cinder cone 500′ high

Name: Lucerne Valley Cinder Co.

Location: *N½ Sec. 24, T.7N., R.3E., SBBM, San Bernardino Co. (1)

Description: quarry for lightweight aggregate in SW¼NW¼NE¼

Geology: 300′ high "Malpais" basaltic cinder cone

Location: *W½W½SW¼ Sec. 26, T.7N., R.15E., SBBM, San Bernardino Co. (1)

Description: 10′ trench

Geology: 6′ of pumiceous rhyolite tuff, 2′ of which are relatively free of lithic fragments; overlain by fanglomerate

Name: Pisgah

Location: *N½ Sec. 32, T.8N., R.6E., SBBM, San Bernardino Co. (3)

Description: intermittent production of volcanic cinders for lightweight aggregate from dragline trench

Geology: black to red, ¼-4″ basaltic cinders form 300′ high cinder cone

Location: N½NW¼ Sec. 1, T.8N., R.15E., SBBM, San Bernardino Co. (1)

Description: 200′ trench

Geology: pumiceous tuff in rhyolite tuff overlain by welded tuff sequence

Conclusions: shows limited promise

Name: Farway

Location: *SW¼ Sec. 14, T.9N., R.5E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: white pumice 20′ thick crops out for 300′ in narrow canyon; strikes NE, dips 30°NW

Location: *E½SE¼ Sec. 35, T.9N., R.15E., SBBM, San Bernardino Co. (1)

Description: 10′ trench

Geology: pumiceous tuff with rhyolite tuff overlain by welded tuff

Name: Kalite

Location: *Secs. 22 and 32, T.11S., R.13E., SBBM, Imperial Co. (1,21)

Description: open pits worked 1930–38; 20,000 tons produced in 1915

Geology: pumice associated with obsidian domes

OCCURRENCES

Name: Amboy Crater (see photo, page 158)

Location: SW¼SW¼ Sec. 1, T.5N., R.11E., SBBM, San Bernardino Co. (1)

Geology: several hundred thousand cubic yards of basaltic cinders in the east one-half of 250′ high by 1400′ diameter volcanic cinder cone

Conclusions: source of lightweight aggregate

Name: Amboy Crater (1)

Location: *SE¼SE¼ Sec. 2, T.5N., R.11E., SBBM, San Bernardino Co.

Geology: west one-half of basaltic cinder cone described in Sec. 1 (see above)

Location: *N½ Sec. 11, T.6N., R.10E., SBBM, San Bernardino Co. (1)

Geology: basaltic cinder cone

Location: *S½ Sec. 22, T.6N., R.10E., SBBM, San Bernardino Co. (1)

Geology: basaltic cinder cone

Location: SW¼ Sec. 29, T.8N., R.6E., SBBM, San Bernardino Co. (1)

Geology: blocky, coarse volcanic cinders on north flank of Pisgah Crater

Conclusions: source of lightweight aggregate

Location: NE¼ Sec. 21, T.10N., R.6E., SBBM, San Bernardino Co. (1)

Geology: pumicite in small lenses

Conclusions: shows little promise

Location: *S½ Sec. 30, T.10N., R.7E., SBBM, San Bernardino Co. (1)

Geology: pumicite deposit; beds dip 15°NE; glass shards show slight devitrification under microscope

QUARTZ [SiO_2]

MINES AND PROSPECTS

Name: Brown Silica Deposit

Location: *Sec. 35, T.4S., R.11E., SBBM, Riverside Co. (29)

Description: 300 tons of 98.6% SiO_2 shipped from open pit 100′ long and 200′ deep

Geology: iron-free quartz deposit about 300′ long by 20′ wide in quartz monzonite

OCCURRENCES

Location: NW¼ Sec. 9, T.2N., R.12E., SBBM, San Bernardino Co. (1)

Geology: fractured quartz vein 30′ wide and 100′ long contains estimated 2–4% manganese and iron oxides

Conclusions: shows little promise

Location: S½SE¼ Sec. 25, T.7N., R.18E., SBBM, San Bernardino Co. (1)

Geology: beds of white, vitreous quartzite up to 10′ in width crop out for about 100′ in metamorphic rocks

Conclusions: shows little promise

Location: *SE¼SE¼ Sec. 30, T.8N., R.19E., SBBM, San Bernardino Co. (1)

Geology: brecciated quartz body 1200′ long and 300′ wide strikes N10°E in gneiss; outcrop extends about 20′ above general ground level and contains an estimated 340,000 tons of quartz

Location: *SW¼NW¼ and NW¼SW¼ Sec. 11, T.9N., R.17E., SBBM, San Bernardino Co. (1)

Description: 50′ shaft

Geology: 15′ quartz vein strikes N, dips 80°W in N-trending shear zone in quartz monzonite

Location: NE¼NE¼ Sec. 1, T.10N., R.5E., SBBM, San Bernardino Co. (1)

Geology: two quartz lenses 300′ long and 10–60′ wide in intrusive complex; quartz appears to be fairly pure

Conclusions: shows limited promise

Location: SE¼SW¼NW¼ Sec. 29, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Geology: pegmatite 100′ long and 10′ wide has fairly pure quartz core

Conclusions: shows little promise

Location: NW¼NW¼ Sec. 21, T.5S., R.11E., SBBM, Riverside Co. (1)

Geology: 100′ by 100′ quartz outcrop in gneiss

Conclusions: shows promise for decorative or landscape stone

SALINES—CALCIUM CHLORIDE [$CaCl_2$]

MINES AND PROSPECTS

Name: Bristol Dry Lake

Location: *Secs. 3, 4 and 5, T.4N., R.12E., and Secs. 21, 22, 27, 28, 29, 32, 33 and 34, T.5N., R.12E., SBBM, San Bernardino Co. (11,33,38)

Description: only commercial source of calcium chloride in California as of 1963; estimated production, 1912–51, 275,100 tons; about 18,000 equivalent tons of 75% $CaCl_2$ valued at over $400,000 produced in 1953; calcium chloride is recovered and concentrated by solar evaporation from brine gathered by pits and at least five miles of "canals"; brine from "canal" analysed 17.3% Cl, 5.73% Na, 4.33% Ca, 0.33% K, 0.09% Sr, and 0.002% B_4O_7; two partially-cored drill holes to 1006′ and 1007′ in Sec. 33, T.5N., R.12E., and Sec. 3, T.4N., R.12E.

Geology: calcium and sodium chlorides with associated salines in brine derived from rock salt bed averaging 5′ thick (7′ maximum) beneath 5′ of playa clay overburden; minable area estimated to be more than five square miles in lowest portion of Bristol Dry Lake

Name: Bristol Dry Lake

Location: *portions of T.4N., R.12E., and T.5N., Rges. 11 and 12 E., SBBM, San Bernardino Co. (11,33)

Description: several test holes within 18–20 square-mile area

Geology: alternating playa salt and clay deposits extend to at least 1000′ depth

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (2,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); potential daily yield of 532 short tons of $CaCl_2$ based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: complex chloride brine (482°F flow temperature at well head) possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

OCCURRENCES

Location: Secs. 1, 9, 13 and $S\frac{1}{2}$ Sec. 23, T.2N., R.15E., $N\frac{1}{2}$ and $SW\frac{1}{4}$ Sec. 17 and $NW\frac{1}{4}$ Sec. 19, T.2N., R.16E., Sec. 13, T.3N., R.14E., and Secs. 17, 21, 29 and 33, T.3N., R.15E., SBBM, San Bernardino Co. (1,31,38)

Geology: brine occurring in Cadiz Dry Lake contains calcium chloride with sodium chloride and some potassium chloride; in 1917, dilute brines were obtained from 2–36′ which contained about 78% NaCl, 16% $CaCl_2$, and less than 3% KCl; test holes 30′ deep encountered brine at 7–8′ and a 3′ salt bed

Conclusions: warrants further investigation

Location: Secs. 5, 9, 17, $W\frac{1}{2}$ Sec. 21, and Sec. 29, T.4N., R.13E., SBBM, San Bernardino Co. (1)

Geology: data indicate that brine containing about 5% $CaCl_2$ occurs at depths of 38–54′

Conclusions: potential source of calcium-chloride brines

TRENDS

Location: Sec. 25, T.4N., R.12E., SBBM, San Bernardino Co. (1)

Geology: some geological potential for calcium chloride and other salines at depth in Bristol Dry Lake

SALINES—POTASSIUM CHLORIDE [KCl]

MINES AND PROSPECTS

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (2,36,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); potential daily yield calculated at 217.6 short tons of KCl based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: complex chloride brine (482°F flow temperature at well head) possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

TRENDS

Location: Southern Pacific lands within the following Sections: 1, 11, 23, and 25, T.9S., R.11E.; 23 and 29, T.9S., R.12E.; 29, 30, 31, and 33, T.9S., R.13E.; 3, 5, 9, and 35, T.10S., R.13E.; and 31, T.10S., R.14E., SBBM, Imperial Co. (1)

Geology: on trend of San Andreas fault zone with which the potassium-bearing magmatic waters in Sec. 23, T.11S., R.13E., are associated

SALINES—SODIUM CHLORIDE [NaCl]

MINES AND PROSPECTS

Location: *Secs. 3, 4 and 5, T.4N., R.12E., and Secs. 21, 22, 27, 28, 29, 32, 33 and 34, T.5N., R.12E., SBBM, San Bernardino Co. (11,33,38)

Description: 1912–51 production reported at 1,609,091 tons of salt mined by stripping overburden, drilling, blasting and loading the top rock-salt bed

Geology: upper rock-salt bed averages 5′ thick (7′ maximum) beneath 5′ clay overburden; minable area of upper bed estimated to be more than five square miles containing an estimated reserve of 16 million tons

Location: Sec. 25, T.5N., R.11E., SBBM, San Bernardino Co. (1)

Description: test hole in $SE\frac{1}{4}SE\frac{1}{4}$ to 50′ depth encountered $3\frac{1}{2}$′ of halite at $36\frac{1}{2}$′ depth

Geology: playa salt bed

Conclusions: shows little promise but some geologic potential for saline deposits at depth

Name: Imperial Salt Works

Location: *$NW\frac{1}{4}$ T.10S., R.13E., SBBM, Imperial Co. (31)

Description: salt produced by solar evaporation 1935–42, 1946; capacity of 16,000 tons per year

Geology: Salton Sea water

Name: Mullet Island Salt Works

Location: *Sec. 9, T.11S., R.13E., SBBM, Imperial Co. (31)

Description: salt produced by solar evaporation 1919, 1934, 1940–42 for icing refrigerator cars

Geology: Salton Sea water supplemented with brine from an artesian well

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (2,37)

Description: brine from 5232′ geothermal well (Imperial Irrigation District #1); potential daily yield calculated at 658.7 tons of NaCl based upon published brine analysis and flow rate (see GEOTHERMAL RESOURCES, Geothermal Wells)

Geology: complex chloride brine (482°F flow temperature at well head) possibly from magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5, page 194)

SALINES—SODIUM SULPHATE [Na_2SO_4]

MINES AND PROSPECTS

Name: Bertram

Location: *N½ Sec. 19, T.9S., R.12E., SBBM, Imperial Co. (1,21)

Description: 2500 tons of thenardite (sodium sulphate) produced in 1923 from open pit 600′ long and 14′ deep; in 1940's, 200 core drill holes located 1000′ strike length of blödite (hydrous sodium magnesium sulphate) averaging 5′ thick between 20–60′ depths (estimated 30,000 tons "probable"); 250 tons of blödite shipped

Geology: beds of thenardite at east end of deposit and blödite at west end in folded Brawley strata; beds trend generally N70°W for 1000′, and dip from 40°N to 65°S

SAND AND GRAVEL

MINES AND PROSPECTS

Location: NW¼NE¼ Sec. 17, T.4N., R.12E., SBBM, San Bernardino Co. (1)

Description: an estimated 14,000 cu. yds. of sand and gravel produced to 1958 from pit 4′ deep

Geology: veneer of surface gravel 2–4′ thick composed of about 80% angular ¼-1″ gravel and 20% sand

Conclusions: source of construction material

Location: SE¼SW¼ Sec. 1, T.6N., R.22E., SBBM, San Bernardino Co. (1)

Description: pit supplied aggregate for construction of U. S. Highway 95

Geology: arkosic alluvium

Conclusions: shows limited promise

Location: *NW¼SW¼ Sec. 6, T.7N., R.24E., SBBM, San Bernardino Co. (1)

Description: material from quarry used for road construction

Geology: river sand and gravel

Location: S½ and NW¼ Sec. 13, T.8N., R.4E., SBBM, San Bernardino Co., one mile south of U. S. Hwy. 66 and two miles from railroad (1)

Description: hundreds of tons produced from pit in NW¼SW¼

Geology: alluvium

Conclusions: source of construction material

Location: NW¼ Sec. 25, T.8N., R.5E., SBBM, San Bernardino Co., 1½ miles from U. S. Hwy. 66 (1)

Description: pit

Geology: high-level sand and gravel of possible Tertiary age

Conclusions: source of construction material

Location: *Sec. 29, T.8N., R.17E., SBBM, San Bernardino Co. (1)

Description: two shallow quarries supplied sand and gravel used in construction of railroad overpass

Geology: alluvium

Location: *NE¼SE¼ Sec. 15 and NW¼ Sec. 24, T.8N., R.22E., SBBM, San Bernardino Co. (1)

Description: quarries supplied material for Needles airport construction

Geology: alluvial gravel

Location: *NE¼ Sec. 22, T.8N., R.23E., SBBM, San Bernardino Co. (1)

Description: large quarry along Colorado River

Geology: Pleistocene-Recent sand and gravel

Location: *NE¼ Sec. 19, T.9N., R.3E., SBBM, San Bernardino Co. (1)

Description: sand pit

Geology: coarse-grained sand of Newberry fm.

Location: *SE¼ Sec. 32, T.9N., R.3E., SBBM, San Bernardino Co. (1)

Description: gravel quarries

Geology: alluvial fan

Location: Sec. 13, T.9N., R.7E., SBBM, San Bernardino Co. (1)

Description: pit in W½NE¼

Geology: alluvial sand and gravel deposit

Conclusions: source of construction material

Location: *SE¼SE¼ Sec. 22, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: sand and gravel pit

Geology: alluvial fan

Location: *SE¼NE¼ Sec. 27, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: sand and gravel pit

Geology: alluvial fan

Location: *NE¼NE¼ Sec. 28, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: sand and gravel pit

Geology: alluvial fan

Location: *N½SE¼ Sec. 32, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: sand and gravel pit

Geology: alluvial fan

Location: *NW¼SW¼ Sec. 34, T.10N., R.2E., SBBM, San Bernardino Co. (1)

Description: sand and gravel pit

Geology: sand facies of the Newberry fm.

Location: *N½NE¼NW¼SW¼ Sec. 13, T.11N., R.6E., SBBM, San Bernardino Co. (38)

Description: pit

Geology: Recent river sand and gravel deposit

Location: *SE¼ Sec. 6, T.3S., R.3E., SBBM, Riverside Co. (1)

Description: pit

Geology: alluvial sand and gravel deposit

Location: *NE¼ Sec. 11, T.3S., R.3E., SBBM, Riverside Co. (1)

Description: pit

Geology: alluvial sand and gravel deposit

Location: *W½W½ Sec. 23, T.3S., R.4E., SBBM, Riverside Co. (1)

Description: pit

Geology: alluvial sand and gravel deposit

Location: *SE¼SW¼ Sec. 7, T.6S., R.9E., SBBM, Riverside Co. (1)

Description: pit

Geology: alluvial fan

Location: Sec. 29 and S½NE¼ and N½SE¼ Sec. 30, T.9S., R.13E., SBBM, Imperial Co., adjacent to Southern Pacific line at Frink siding (1)

Description: pits

Geology: sand and gravel in fanglomerate; 100,000–150,000 tons estimated in W½ Sec. 29; 109,100 tons on Sec. 30

Conclusions: source of sand and gravel

Location: SE¼ Sec. 3 and NW¼ Sec. 11, T.12S., R.16E., SBBM, Imperial Co. (1)

Description: open pit

Geology: sand and gravel in alluvial fan

Conclusions: source of sand and gravel

OCCURRENCES

Location: Sec. 13, T.4S., R.7E., SBBM, Riverside Co. (1)

Geology: sand and gravel deposits in alluvial fan

Conclusions: some potential for road building and aggregate due to proximity to Dillon Highway

Location: Sec. 35, T.6S., R.9E., SBBM, Riverside Co. (1)

Geology: sand and gravel in long, broad, dry wash

Conclusions: valuable as aggregate and fill

Location: Secs. 23, 25, and 35, T.6S., R.10E., SBBM, Riverside Co. (1)

Geology: extensive sand and gravel deposits in alluvial fans and fanglomerate

Conclusions: potential source of aggregate and fill

SEMIPRECIOUS STONES

MINES AND PROSPECTS

Name: Dictator

Location: *NW¼ Sec. 18, T.7N., R.9E., SBBM, San Bernardino Co. (1)

Description: pit

Geology: opal in basalt

Name: Ribbon Rock

Location: *Sec. 8, T.9N., R.10E., SBBM, San Bernardino Co. (38)

Description: pit

Geology: banded marble onyx

Location: *N½NE¼ Sec. 26, T.10N., R.1E., SBBM, San Bernardino Co. (1)

Description: shallow pits

Geology: two veins of banded silver onyx (travertine) strike N80°W, dip 80°S in intrusive andesite and latite porphyry

SILICA [SiO_2]

OCCURRENCES

Location: N½N½SE¼ and NE¼SW¼ Sec. 23, T.3S., R.3E., SBBM, Riverside Co. (1)

Geology: extensive deposit of dune sand

Conclusions: potentially useful for plaster aggregate or other specialty sand uses

STRONTIUM [Sr]

MINES AND PROSPECTS

Location: *Sec. 6, T.4N., R.12E., SBBM, San Bernardino Co. (7)

Description: two carloads shipped 1942; developed by 1′-deep furrows plowed in area 1900′ by 600′; 169 lbs. celestite ($SrSO_4$) recovered from 14.4 cu. ft. of clay in test pit

Geology: concretionary celestite nodules in upper 1–2′ of gypsiferous playa clay and sand

Location: Sec. 29, T.8N., R.7E., SBBM, San Bernardino Co. (7)

Description: pits

Geology: eastern extension of Sec. 30 deposits described below; discontinuous outcrops of sedimentary and concretionary celestite with interbedded gypsum, tuff, and clay, occur for 1,400′ along easterly trend; celestite in beds 0.05–0.1′ thick totals 20′ within 80′ stratigraphic interval

Conclusions: warrants further development pending favorable market conditions

Name: DuPont, Rowe and Buehler

Location: *NE¼ Sec. 30, T.8N., R.7E., SBBM, San Bernardino Co. (7,33)

Description: some (unrecorded) production during World War II; largest reserves of strontium in California; inferred reserves estimated at 1½ to 2½ million tons per 50′ of depth (including deposits in Sec. 29)

Geology: sedimentary beds and concretions of celestite with interbedded gypsum, tuff, and clay crop out discontinuously (thin alluvial cover between outcrops) for 5,000′ along easterly strike; beds dip 20–50°S and are offset by northerly-trending faults; individual celestite beds are up to 2′ thick, but zones to 30′ thick contain estimated 75% celestite; maximum total thickness of celestite beds is 112′; average analysis of 14 samples is 81% $SrSO_4$, ranging from 64.1–92.6%

OCCURRENCES

Location: Secs. 1, 9, 13, and S½ Sec. 23, T.2N., R.15E., and N½ and SW¼ Sec. 17 and NW¼ Sec. 19, T.2N., R.16E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Gypsum and Gypsite)

Conclusions: shows little promise

Location: Sec. 13, T.3N., R.14E., and Secs. 17, 21, 29 and 33, T.3N., R.15E., SBBM, San Bernardino Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Gypsum and Gypsite)

Conclusions: shows little promise

TRENDS

Location: NE¼ Sec. 25, T.8N., R.6E., SBBM, San Bernardino Co. (1)

Geology: on trend with celestite deposit in adjoining Sec. 30, T.8N., R.7E.; bedrock covered by alluvium

TALC

MINES AND PROSPECTS

Location: *Secs. 22 and 28, T.12N., R.5E., SBBM, San Bernardino Co. (1)

Description: an estimated 150 tons of talc mined from pits, probably in the 1930's

Geology: talc-sericite schist units 5–15′ thick contain talc lenses 2–3′ thick

WOLLASTONITE

OCCURRENCES

Location: SE¼SE¼ Sec. 13, T.11N., R.1E., SBBM, San Bernardino Co. (1)

Geology: wollastonite layers in quartzite and dolomite marble; main bed strikes N20°W, dips 50–60°NE and extends for at least 1800′ along strike; terminated by fault

on N and by quartz diorite on S; major impurities are quartz and calcite; minor garnet and diopside also occur

Conclusions: warrants further investigation

Location: *NE¼NE¼ Sec. 24, T.11N., R.1E., and SW¼SW¼ Sec. 18, and NW¼NW¼NW¼ Sec. 19, T.11N., R.2E., SBBM, San Bernardino Co. (1)

Geology: (see above listing)

Testing Imperial Irrigation District No. 1 geothermal well drilled by O'Neill Geothermal, Inc. in Sec. 23, T.11S., R.13E., SBBM, Imperial Co. Large tank is water-steam separator.
(Courtesy of Imperial Irrigation District)

Geothermal Resources

Steam, hot water, and associated gases rise along relatively recent fractures in the earth's crust to surface locations (geothermal sites). The useable heat at these sites is potentially valuable as a source of energy and for space heating.

For centuries, Iceland has used large volumes of natural hot water for heating purposes. Natural steam has been used for nearly 50 years in Italy to generate electric power. In 1960, a geothermal power plant at Larderello, Italy was producing more than 300,000 kilowatts. By 1961, 125,000 kilowatts were being produced from steam wells at Wairakei, New Zealand from a geothermal field with an estimated capacity of at least 400,000 kilowatts. A 12,500-kilowatt geothermal power plant was placed in operation at the Geysers, Sonoma County, California by the Pacific Gas and Electric Company in the late spring of 1960, and a second 12,500-kilowatt unit was completed early in 1963.

Copious flows of hot, magmatic brine have been produced from four geothermal wells drilled to depths of about 5,000 to 8,000 feet in the San Andreas fault zone in 1960–63, at the southeast end of Salton Sea, Imperial County. The brine is laden with potentially valuable chlorides of at least fifteen metals. These wells represent man's first successful recovery of an ore-forming fluid. At this writing, additional wells were being drilled, and plans being formulated to develop geothermal power and to recover the metals and chlorides.

GEOTHERMAL WELLS

Name: O'Neill Geothermal, Inc., "Imperial Irrigation Dist. #1" and "Sportsman #1" (see photo on facing page)

Location: *Sec. 23, T.11S., R.13E., SBBM, Imperial Co. (2,36,37)

Description: Imperial Irrigation District #1 geothermal well drilled to 5232′ in center of NW¼ Sec. 23 in 1962; flow measured at 423,600 lbs. of hot brine per hour; brine contains 33.2% solids and is 482°F (flow temperature) at well head; brine sample taken after 90-day flow test analysed as follows (reported in parts per million by weight): Na, 54,000; K, 23,800; Li, 321; Ca, 40,000; total halides as Cl, 184,000; specific gravity at 20°C, 1.262; spectrographic analysis of evaporated residue gave following semiquantitative results (reported in parts per million of original brine): Fe, 3,000; Mn, 1,000; Ag, 2; B, 500; Ba, 200; Cr, 0.5; Cu, 20; Ni, 2; Pb, 100; Sr, 2,000; and Zn, 500

Sportsman #1 geothermal well drilled to 4738′ in SW¼NE¼ Sec. 23 in 1960–61,

reportedly flowed 240,000 lbs. of hot brine per hour with a similar mineral content as reported for the Imperial Irrigation District #1 well

Geology: complex chloride brine flows from possibly same magma chamber that produced nearby obsidian domes; well taps fissures of the San Andreas fault system (see Figure 5 below)

Name: Earth Energy, Inc., "River Ranches #1"

Location: *NW¼NW¼ Sec. 24, T.11S., R.13E., SBBM, Imperial Co. (1)

Description: drilled to 8100 feet late in 1963; bottom-hole temperature indicated to be more than 800°F

Geology: (see above listing)

Name: Western Geothermal, Inc., "Sinclair #3"

Location: *NW¼NW¼ Sec. 10, T.12S., R.13E., SBBM, Imperial Co. (1)

Description: drilled to 6922′ in 1963; brine reported to contain 35% solids and to be chemically similar to that in the O'Neill wells (see above); flowing brine temperature at well head reported at 437°F

Geology: well may tap fissures of the Imperial fault

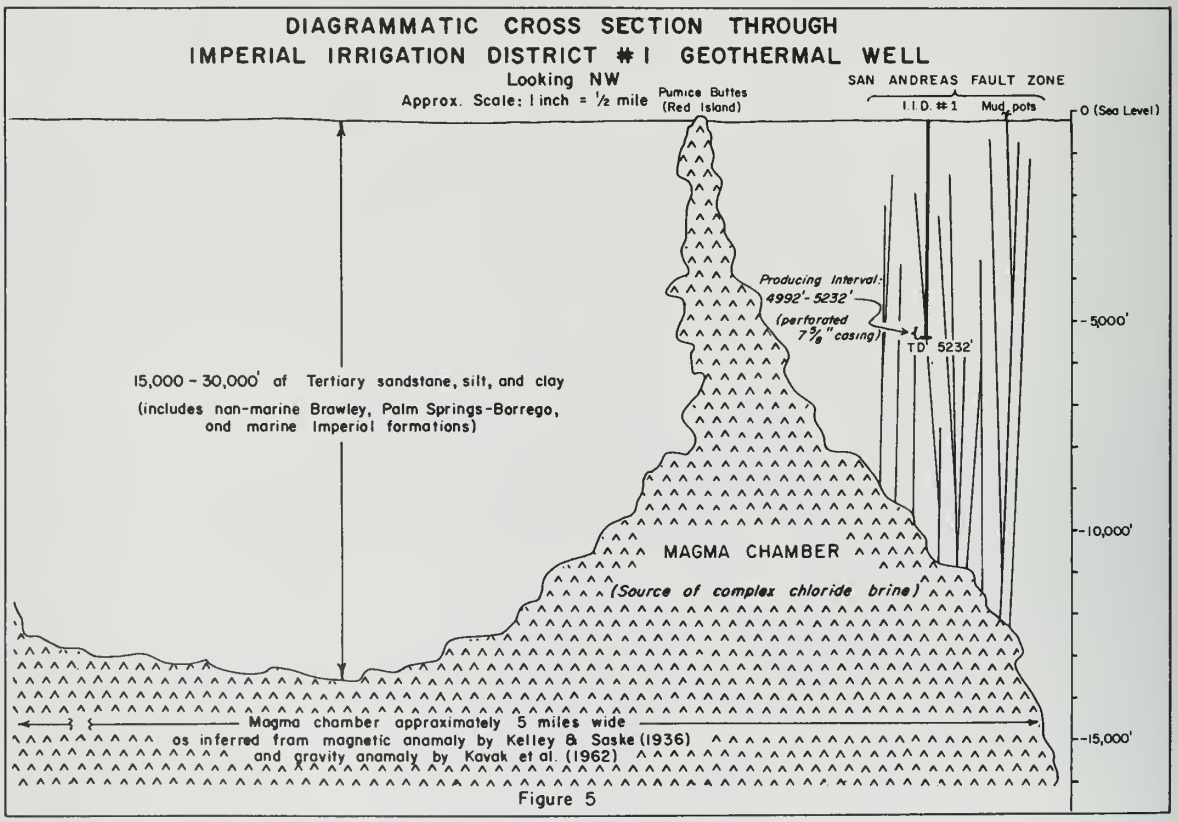

DIAGRAMMATIC CROSS SECTION THROUGH
IMPERIAL IRRIGATION DISTRICT # I GEOTHERMAL WELL
Looking NW
Approx. Scale: 1 inch = ½ mile
Pumice Buttes (Red Island)
SAN ANDREAS FAULT ZONE
I.I.D. #1
Mud pots
0 (Sea Level)
Producing Interval: 4992'-5232'
(perforated 7⅝" casing)
TD 5232'
-5,000'
15,000 - 30,000' of Tertiary sandstone, silt, and clay
(includes non-marine Brawley, Palm Springs-Borrego, and marine Imperial formations)
MAGMA CHAMBER
(Source of complex chloride brine)
-10,000'
Magma chamber approximately 5 miles wide
as inferred from magnetic anomaly by Kelley & Saske (1936)
and gravity anomaly by Kovak et al. (1962)
-15,000'
Figure 5

TABLE 1

THERMAL WELLS[1]

NUMBER	LOCATION (SBBM)			TEMPERATURE	TOTAL DEPTH	REMARKS
	SEC.	TWP.	RGE.	(°F)		
1	18	10N.	21E.			artesian
several	29	2S.	5E.			
several	30	2	5			
several	31	2	5			
several	32	2	5			
several	33	2	5			
several	3	3S.	5E.			
3	4	3	5			
several	5	3	5			
several	8	3	5			
several	9	3	5			
3	10	3S.	5E.	200	200′	
2	11	3	5			
several	12	3	5			
several	13	3	5			
3	14	3	5			
several	17	3S.	6E.			
several	18	3	6			
1	9(?)	4	7	120	360′	
1	16	6	10	hw	864′(?)	
1	2	9	12	186(?)	320′	898 gpm artesian
1	2	11S.	13E.	hw	1,100′	
3	10	11	13	s	1,473′	(inundated by Salton Sea)
1	11	11	13	hw	1,200′ (approx.)	
1	11	11	13	s	1,320′	
1	12	11	13	100	750′	
1	28	11S.	13E.	s	1,054′	
1	10	12	13	567	4,700′	
1	9	13	14	310	8,000′	
1	3	15	12			
1	8	16	16	320	11,600′ (approx.)	
1	16	16	17	158	5,708′	

[1]inadequate flow or temperature to be classified as geothermal wells
s—steam reported; hw—hot water reported

TABLE 2

HOT SPRINGS

LOCATION (SBBM)		
SEC.	TWP. S.	RGE. E.
7	4	4
1	9	12
35	10	13

TABLE 3

MUD VOLCANOES AND MUD POTS

LOCATION (SBBM)			REMARKS
SEC.	TWP. S.	RGE. E.	
35	9	13	
36	9	13	
1	10	13	
2	10	13	
10	10	13	
11	10	13	
23	10	13	
24	10	13	
10	11	13	(inundated by Salton Sea)
14	11	13	
24	11	13	
30	11	14	

GEOTHERMAL TRENDS

Location: Southern Pacific lands within the following townships: T.4S., R.7E.; T.6S., R.9 & 10E.; T.7S., R.9 & 10E.; T.8S., R.11E.; T.8S., R.12E.; T.9S., R.11E.; T.9S., R.12E.; T.9S., R.13E.; T.10S., R.13E.; T.10S., R.14E.; T.11S., R.14E.; Sec. 21, T.11S., R.15E.; Sec. 31, T.11S., R.16E.; Secs. 3 and 13, T.12S., R.15E.; Secs. 5, 9, 11, 13, 15 and 17, T.12S., R.16E., SBBM, Riverside and Imperial Counties (1)

Geology: on the trend of San Andreas and Imperial fault zones which are known to localize geothermal fluids in this general region for some 75 miles between Desert Hot Springs in T.2S., R.5E., and site of 4700′ test with 567°F bottom-hole temperature in T.12S., R.13E.

Conclusions: geologic potential for geothermal brine with possible by-product chlorides, base metals, and silver

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Water Resources

The following water resources data are for the PART II and PART III areas. Only data relative to interior desert drainage basins and the Colorado River basin are included, and generally these data were assembled only for areas within Southern Pacific indemnity limits. The mean annual precipitation measured at several stations in this area is:

STATION	MEAN ANNUAL PRECIPITATION (INCHES)	YEARS OF RECORD
Mojave	6.32	25
Lanchester	4.79	15
Palmdale	8.87	30
Victorville	5.99	14
Daggett	4.70	30
Bagdad	2.28	23
Twentynine Palms	4.37	16
Needles	4.63	62
Palm Springs	6.28	30
Indio	3.38	30
Blythe	3.95	30
Niland	1.90	20

These data emphasize the relative scarcity of water resources in this area.

Water resources are listed in:

TABLE 4—Springs
TABLE 5—Wells
TABLE 6—Surface Water Discharge Data

These tabulations are not a complete listing of all water resources. Sources of data are Southern Pacific files and published reports of federal and state agencies. Water resources data are not located on the Mineral Commodity maps.

TABLE 4 SPRINGS

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		REMARKS
		SEC.	TWP. S.	RGE. E.	RATE	DATE	
Mesa		2	29	38	i	43	
		29	29	39	f	6-58	Q
Desert		24	30	37	f	29	Q
		4	30	46	f	29	Q
Bird	2	31	31	44	i	56	
		16	32	35	i	56	
		28	32	43	f	6-53	
Milk	2	17	32	45	f	2-43	
			(SBBM)				
			N.	W.			
		11	3	1	i	49	
Lovejoy		16	6	9	f	3-60	
Taylor		36	7	1	f	3-60	
Stoddard		9	7	2			
RZ		10	7	3	i	12-59	
		12	9	14	i	43	
		29	11	3	i	55	
		35	12	14	f	8-51	
			N.	E.			
		25	1	4	dry	3-58	
		35	1	4	i	55	
	3	3	2	3	f	55	
Viscera		9	2	3	i	55	
Mound		15	2	3	i	55	
		17	2	3	i	55	
		19	2	3	f	55	
		33	2	3	f	2-59	
		2	2	4	i	55	
Saddlerock		15	2	4	i	55	
Burns		32	2	4	1.5 gpm	3-58	Q
Cushenberry		10	3	1	f	10-52	Q
Terrace		21	3	2	f	9-52	Q
Rock Corral		21	3	4	f	12-17	Q
Surprise		35	3	7	i	55	
		10	3	17	dry	5-59	
Cottonwood		25	4	2	f	7-52	Q
Old Woman		31	4	3	f	12-17	Q
		2	4	17			
Sheep Camp		5	4	17	f	5-59	
		11	5	17	f	5-60	
		15	5	17	f	5-60	
Sunflower		6	5	18	dry	5-60	Q
		17	5	18	dry	5-60	
Wilhelm		33	5	18	f	5-60	
Quill		4	6	1	3 gpm	10-51	
		18	6	8	i	55	
Honeymoon		13	6	17	i	6-60	
Willow		27	6	17	i	6-60	
Dripping		33	6	17	i	6-60	
Sweetwater		34	6	17	i	6-60	
Paramount		35	6	17	i	6-60	

[1]one spring only unless otherwise noted
f - flowing
i - intermittent
gpm - gallons per minute
Q - quality data available

NAME	NUMBER[1]	LOCATION (SBBM)			DISCHARGE		REMARKS
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
Granite Tank		12	6	18	i	6-60	
	2	1	6	23	f	5-60	
Aztec		12	7	1	i	55	
Sweetwater		13	7	1	i	55	
		25	7	1	i	55	
Goat		30	7	1	f	3-60	
	2	33	7	1	i	55	
Stoddard		9	7	2	f	5-16	
Sheep		6	7	4	i	55	
		36	7	5	i	55	
		36	7	11	0.55 gpm	6-59	
Bonanza		22	7	15	f	5-55	
Barrel		13	7	17	i	6-60	
		9	7	22	dry	6-60	
	4	27	7	23	f	6-60	
		18	7	24	i	6-60	
Kane	2	31	8	3	i	55	
Kane		32	8	3	i	55	
Budweiser		20	8	12	dry	5-59	
Snake		5	8	13	1 gpm	4-59	
Cottonwood	2	7	8	13	f	4-59	
Cove	2	8	8	13	f	4-59	
		18	8	13	i	56	
Van Winkle		23	8	13	f	4-59	
Chuckwalla		23	8	15	f	5-59	
Hummingbird		30	8	16	f	5-59	
Fenner		28	8	18	f	5-61	
		18	8	22	i	6-60	
		26	8	22	i	6-60	
Newberry		33	9	3	f	9-58	Q
		36	9	11	f	59	
Coyote		25	9	12	f	59	
		29	9	12	f	59	
Arrowweed		22	9	13	f	4-59	
Quail		25	9	13	dry	4-59	
Twin		30	9	13	dry	5-59	
Sacramento		3	9	21	2–3 gpm	6-60	
		27	9	21	1 gpm	6-60	
Sweetwater		11	10	1	i	56	
		25	10	3			
Cady		29	10	4	f	5-58	Q
Hyten		32	10	9	i	55	
		11	10	13	f	56	
Cornfield		12	10	13	f	56	
Blind		28	10	14	f	5-59	
Goldstone		31	10	14	f	4-59	
Foshay		32	10	14	f	4-59	
Beecher		16	10	15	f	11-17	Q
Desert		18	10	16	dry	5-59	
Red		30	10	21	i	6-60	
Mesquite	5	25	11	7	f	4-58	Q
Epsom		21	11	8	f	4-58	Q
Hackberry	2	1	11	16	3.5 gpm	5-60	
Vontrigger		4	11	17	5 gpm	4-60	Q
		7	11	17	3.5 gpm	5-60	

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (SBBM)			DISCHARGE		REMARKS
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
		6	12	2	i	51	
Paradise	2	7	12	2	f	51	
Jack		10	12	2	i	51	
Jack Rabbit		27	12	2	10 gpm	58	
Piute		24	12	18	40-50 gpm	6-60	
			S.	E.			
Forks		9	1	3	f	55	
	2	12	1	3	50+ gpm	3-58	
	2	2	1	4	10+ gpm	3-58	
Leopard		10	1	4	dry	3-58	
	3	18	1	4	25+ gpm	3-58	
Sherman Shady		20	1	4	dry	3-58	
		28	1	4	f	3-58	
Black Rock		30	1	6	dry	55	
Quail		33	1	7	f	4-52	Q
		5	2	4	f	5-58	Q
Stubby		27	2	7	i	58	
		36	3	3			
		7	4	7	f	11	
		17	4	7	i	58	
		28	4	7	i	58	
	3	14	5	11	i	58	Q
Cornflower		20	6	16	f	54	Q
Corn		29	6	16	dry	4-60	
Sheep Hole		10	7	10	i	58	
Hidden		11	7	10	i	58	
		28	7	10	i	58	
Canyon		20	7	13	f	5-52	Q
	8	2	8	11	f	58	
Dos Palmas	5	3	8	11	f	58	
		4	8	11	i	58	
	3	9	8	11	f	56	
		10	8	11	i	56	
Hunters		12	8	11	i	56	
		14	8	11	i	56	
	2	15	8	11	f	56	
	4	16	8	11	f	56	
	3	22	8	11	f	56	
	3	18	8	12			
	2	30	8	12	i	56	
Chuckawalla		33	8	17	f	5-50	Q
	4	1	9	12	f	4-61	
		2	9	12	i	56	
		3	9	12	f	4-61	
		12	9	12	f	4-61	
		15	9	12	f	4-61	
		18	9	13	f	4-61	
	2	19	9	13	f	4-61	
Frink	5	20	9	13	f	4-61	
	2	27	9	13	f	4-61	
	3	28	9	13	f	4-61	

[1]one spring only unless otherwise noted
f - flowing
i - intermittent
gpm - gallons per minute
Q - quality data available

NAME	NUMBER[1]	LOCATION (SBBM)			DISCHARGE		REMARKS
		SEC.	TWP. S.	RGE. E.	RATE	DATE	
		29	9	13	f	4-61	
Palm Wash		20	10	9	f	1-49	Q
	4	1	10	13	f	4-61	
		35	10	13			
		22	10	14	f	4-61	
		23	10	14	f	4-61	
	2	26	10	14	f	4-61	
		2	10	21	f	7-60	
		1	11	9			
McCain		30	11	10	f	40	
		8	11	15	f	3-61	
		16	11	15	f	3-61	
		17	11	15	f	3-61	
		21	11	15	f	3-61	
		22	11	15	f	3-61	
	2	26	11	15	f	3-61	
	5	27	11	15	f	3-61	
		35	11	15	f	2-61	
		36	11	15	f	2-61	
		20	11	21	dry	60	
Arrowweed		22	11	21	i	51	
Arrowweed		28	11	21	dry	60	
Kane		21	12	11	f	61	
		33	12	12	f	56	
	2	1	12	13	f	2-61	
		2	12	13	f	2-61	
		3	12	13	f	2-61	
	2	12	12	13	f	2-61	
	3	13	12	13	f	2-61	
	4	18	12	16	f	2-61	
Peter Kane		15	12	20	i	53	

TABLE 5 WELLS

NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
	34	29	37	9	2-58	P
	11	29	39			
4	12	29	39	392–397	2-58	Q,P
	13	29	39	400	55	Q
	14	29	39			
2	15	29	39	dry-64	2-58	Q
	21	29	39	46	2-58	
3	22	29	39	20–48	2-58	
	23	29	39	350	7-54	P
	24	29	39	200	6-58	P
	26	29	39	138	2-58	
	27	29	39	dry	2-58	
	28	29	39	174	2-58	
2	29	29	39	66–69	2-58	Q,P
	31	29	39			Q

[1]one well only unless otherwise noted
[2]+ indicates pressure head; f indicates flowing
[3]data available from published literature or Southern Pacific files on:
Q - quality
L - logs
P - performance
T - thermal water
A - artesian flow

WELLS (continued)

NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
3	32	29	39	54-77	2-58	P
3	33	29	39	75-180	6-58	Q,L,P
2	34	29	39	240	6-58	P
	35	29	39	356	2-58	
	18	29	40			
	21	29	40			Q,P
3	22	29	40	396	2-58	Q,P
	34	29	41	28	1-53	
	12	30	37	107	2-58	Q
2	13	30	37	dry	2-58	L
	14	30	37	90	8-56	
5	23	30	37	185	2-58	Q,P
11	24	30	37	+1-51	2-58	Q,L,P,A
	25	30	37	34	2-58	L
9	26	30	37	70-81	2-58	Q,L,P
3	27	30	37	94-118	2-58	P
2	28	30	37	78-125	1-58	Q,P
3	34	30	37	69-79	2-58	
2	35	30	37	63-97	1-58	L,P
4	36	30	37	33-72	1-58	Q,L,P
5	3	30	38	2-56	10-56	Q
3	4	30	38			
3	5	30	38	13-101	2-58	Q
8	8	30	38	+1-26	2-58	Q,P,A
	16	30	38			
6	19	30	38	+4-22	2-58	Q,L,P,A
7	20	30	38	+2-7	2-58	Q,P,A
2	21	30	38	+1	10-56	Q,P,A
2	24	30	38	13	2-58	Q
	28	30	38			P,A
	29	30	38			A
7	30	30	38	f-24	1-58	Q,L,P,A
3	31	30	38	50-67	1-58	L,P
6	32	30	38	f-37	1-58	Q,L,P,A
2	34	30	38	8-12	2-58	Q,P
	3	30	39	237	2-58	L,P
	4	30	39	dry	4-53	
	6	30	39	dry	2-58	
2	8	30	39	138	2-58	Q
	18	30	39			
2	13	30	41	146-187	3-55	
	36	30	41	236	12-54	Q
	4	30	42	107	3-55	
2	5	30	42	122-123	4-53	
	7	30	42	159	17	
	8	30	42	dry	4-53	
	10	30	42	71	3-55	
	12	30	42	182	12-54	
2	17	30	42	dry	3-55	
2	18	30	42	101	3-55	Q

[1]one well only unless otherwise noted
[2]+ indicates pressure head; f indicates flowing
[3]data available from published literature or Southern Pacific files on: Q - quality, L - logs, P - performance, T - thermal water, A - artesian flow

NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
	19	30	42	108	12-54	
4	20	30	42	91–97	4-53	Q
	21	30	42	51	6-55	
	22	30	42	dry	3-55	Q
	24	30	42	147	3-55	Q
	2	30	43	20	3-55	Q
2	2	30	44	30	5-55	
	35	30	44	86	5-55	
	5	30	45			Q
	6	30	45			Q
	9	30	45	153	3-55	
	14	30	45	dry	20	
	24	30	45	dry	20	
	26	30	45	dry	3-55	
	35	30	45	143	12-54	
	19	30	46	dry	20	
2	1	31	37	81–126	1-58	Q,L,P
3	2	31	37	100–147	1-58	L,P
	4	31	37			P
	5	31	37	156	1-58	Q,P
	6	31	37			
	8	31	37	174	1-58	
3	10	31	37	dry-124	1-58	Q,P
3	12	31	37	80–155	1-58	
2	13	31	37	174–184	1-58	
	14	31	37	197	1-53	Q,P
3	22	31	37	253–270	1-58	L
	23	31	37	dry	1-58	P
	26	31	37	244	1-58	
2	28	31	37	243–266	1-58	P
	30	31	37	307	1-58	
2	32	31	37	277–307	1-58	P
2	33	31	37	256–274	1-58	
	34	31	37	dry	1-58	
	35	31	37	243	3-58	Q
	6	31	38	35	29	P
	18	31	38	147	1-58	
3	22	31	38	dry	1-58	L
	31	31	38	198	1-58	P
	23	31	39	dry	1-58	
2	24	31	39	370–385	11-57	
3	35	31	39	289–330	1-58	
	32	31	40	dry	11-57	
	35	31	40	195	11-57	
	31	31	41	220	10-52	Q,L
	5	31	42	52	8-53	
	23	31	42	173	3-55	
	25	31	42	189	3-55	
	11	31	44	20	5-59	
2	1	31	45	118	3-55	
	12	31	45	dry	2-54	
	14	31	45	dry	12-59	
	15	31	45	108	12-54	
2	24	31	45	106–122	12-54	
	30	31	45	dry	12-59	

WELLS (continued)

NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
	2	31	46	100	3-55	Q
	5	31	46	105	20	
	6	31	46	109	3-55	
	7	31	46	dry	3-55	
	12	31	46	dry	9-56	
	13	31	46	dry	9-56	
	14	31	46	92	3-55	
2	16	31	46	dry	9-56	Q
	18	31	46	113	20	
3	19	31	46	dry-104	3-55	
2	21	31	46	dry-108	3-55	Q
	22	31	46	dry	9-56	
	23	31	46	dry	9-56	
	24	31	46	dry	9-56	
	5	31	47	253	12-54	
	14	32	36	dry	1-58	
	20	32	36	486	9-55	
	21	32	36	371	3-56	Q,L,P
3	22	32	36	612	1-58	Q,L,P
	23	32	36	350	1-58	
	28	32	36	dry	29	
	34	32	36			
3	35	32	36	206–265	10-56	Q,L,P
	36	32	36			
	1	32	37	230	2-58	
3	2	32	37	dry	1-58	P
5	4	32	37	335–340	1-58	Q,P
	6	32	37	dry	1-58	
	8	32	37	dry	1-58	
2	9	32	37	365	1-58	L
	11	32	37	279	3-58	
	12	32	37			P
2	14	32	37	323	1-58	
	16	32	37	386	1-58	L
	19	32	37	dry	1-58	
2	22	32	37	304–394	1-58	
	23	32	37	353	1-58	P
2	24	32	37	dry-238	1-58	Q,P
6	26	32	37	352–362	1-58	L
	32	32	37	419	2-53	P
	34	32	37	dry	1-58	
	35	32	37	359	1-58	P
2	36	32	37	dry	7-56	P
2	10	32	38	179	1-58	Q
	20	32	38	dry	1-58	
	30	32	38	dry	1-58	
	32	32	38	247	3-58	Q
	4	32	39	207	1-58	Q,L
	28	32	39			
	30	32	39	227	1-58	

[1]one well only unless otherwise noted
[2]+ indicates pressure head; f indicates flowing
[3]data available from published literature or Southern Pacific files on:

Q - quality
L - logs
P - performance
T - thermal water
A - artesian flow

NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
	32	32	39	dry	1-58	
4	33	32	39	230-297	11-57	Q,P
2	31	32	40	214	4-54	L,P
	15	32	41	203	5-53	Q,L
	11	32	44	0	4-43	A
	17	32	44	dry	12-59	
	22	32	44			
	24	32	45	dry	12-59	
	6	32	47	dry	6-56	
	20	32	47			
	21	32	47			
2	34	32	47			
		(SBBM)				
		N.	W.			
9	6	3	3	33-95	3-56	L,P
9	7	3	3	8-28	4-57	P
16	1	3	4	31-114	2-57	Q,L,P
	9	3	4			
6	12	3	4	8-94	2-56	
3	13	3	4	84-142	2-56	P
	11	3	5	36	2-57	
2	12	3	5	dry-79	2-57	
	9	3	7	233	3-57	
12	1	4	1	45-65	11-54	Q,L,P
16	2	4	1	21-74	4-54	Q,L,P
9	3	4	1	9-117	3-54	L
	4	4	1	142-176	2-54	
3	5	4	1	84	12-56	
3	6	4	1	23-26	3-17	
2	7	4	1	11-23	12-56	
6	9	4	1	41-46	2-54	Q,L,P
17	10	4	1	+0.3-103	2-54	Q,L,P,A
13	11	4	1	f-53	4-54	Q,L,P,A
20	12	4	1	50-122	4-54	Q,L,P
4	13	4	1	154-171	6-55	L,P
23	14	4	1	+8-84	2-54	Q,L,P,A
24	15	4	1	12-78	2-54	L,P
	17	4	1	19-79	1-57	
3	18	4	1	57-100	3-60	Q,P
	19	4	1	72	1-57	
3	20	4	1	145-241	1-57	L,P
3	21	4	1	137-145	2-54	L
3	22	4	1	106-132	2-54	L,P
15	23	4	1	33-126	2-54	Q,L,P
	24	4	1	58	2-54	L,P
2	26	4	1	220	3-55	P
	1	4	2	19	17	
	3	4	2	176	12-56	Q,L,P
6	4	4	2	177-230	12-56	Q,L,P
12	5	4	2	182-235	2-33	L,P
3	6	4	2	dry-194	12-56	P
2	8	4	2	255-278	12-56	
2	9	4	2	248-293	12-56	L
2	10	4	2	184-220	11-57	P
	12	4	2	dry-68	12-56	
4	13	4	2	66-100	1-57	L,P
	14	4	2	144	3-17	

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	16	4	2	304	1-57	Q
	18	4	2	157	1-57	
	19	4	2	160	1-57	
4	20	4	2	199–450	1-57	L,P
	24	4	2	309	1-57	
	30	4	2	119	1-57	
	36	4	2	17	1-57	
5	1	4	3	191–289	12-56	P
10	2	4	3	162–179	12-56	L,P
3	3	4	3	149–162	12-56	
4	4	4	3	170–176	11-56	P
21	5	4	3	152–196	6-57	L,P
33	6	4	3	50–81	6-56	Q,L,P
11	7	4	3	37–54	5-56	Q,L,P
9	8	4	3	88–180	12-56	P
6	9	4	3	187–211	12-56	Q,L,P
5	10	4	3	188–261	12-56	Q,L,P
2	11	4	3	231	1-57	
	12	4	3	253	12-56	L,P
	14	4	3	378	1-57	
	15	4	3	145	17	
14	17	4	3	103–219	12-56	L,P
15	18	4	3	43–45	5-56	L
8	19	4	3	55–138	1-57	
9	20	4	3	47–54	5-56	Q,L,P
4	21	4	3	148	1-57	Q
11	29	4	3	53–58	4-56	L,P
14	30	4	3	61–86	1-57	L,P
10	31	4	3	39–59	3-56	L,P
3	32	4	3	201–217	3-56	L
6	1	4	4	21–30	6-56	P
	8	4	4	341	11-57	P
3	12	4	4	dry	2-57	
5	13	4	4	40–47	1-57	L,P
	21	4	4	342	17	L
2	24	4	4			L
	25	4	4	203	3-57	L
2	26	4	4	185–294	3-57	P
	28	4	4	451	3-57	Q,P
2	29	4	4			L,P
	35	4	4			P
7	36	4	4	50–59	2-57	P
3	1	4	5	389–404	3-57	Q,P
	3	4	5	460	2-57	L,P
	5	4	5	510	4-18	L
	12	4	5	dry	3-57	
	18	4	5	dry	2-57	
	22	4	5	671	11-57	P
	27	4	5	dry	2-57	L
	28	4	5			L
	31	4	5	dry	2-57	L

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	34	4	5	750	2-57	
	35	4	5	750	17	
	15	4	6	870	17	P
2	23	4	6			
	26	4	6			
	35	4	6			
	7	4	7	dry	12-56	
2	8	4	7	dry	12-56	
	14	4	7			
	23	4	7			
2	27	4	7	dry	12-56	
	33	4	7	dry	12-56	
4	35	4	7	dry-105	12-56	
11	1	5	1	76-98	11-54	Q,P
4	2	5	1	92-98	11-54	P
	3	5	1	143	12-54	
9	12	5	1	68-72	11-54	Q,P
2	13	5	1	47-52	6-55	
	14	5	1	25	9-29	L
	15	5	1	dry	10-54	
3	22	5	1	36-45	10-54	L
2	25	5	1	21	10-51	Q,L,P
	27	5	1	10	16	
	28	5	1	20	16	
	29	5	1	196	11-56	
	30	5	1	298	5-57	
4	31	5	1	130-198	11-56	L,P
3	32	5	1	67-105	12-56	P
	33	5	1	37	2-54	
2	34	5	1	12	3-54	
5	35	5	1	34-35	3-54	P
2	36	5	1	64	11-54	Q,L,P
2	3	5	2	298	17	Q
2	4	5	2	dry	17	
	5	5	2			
2	6	5	2			L
	8	5	2	232	1-57	
	9	5	2	236	1-57	
	10	5	2	4	17	
	12	5	2	25	17	
2	18	5	2	132-145	1-57	
9	19	5	2	122-170	1-57	L
2	25	5	2	dry	11-56	L
2	30	5	2	112	11-56	
	31	5	2	154	11-56	
5	32	5	2	160-187	11-56	Q,L,P
3	33	5	2	161-181	11-56	
3	2	5	3	117-158	3-17	
7	3	5	3	71-98	4-57	L
6	4	5	3	80-106	4-57	
4	5	5	3	89-90	4-57	
	6	5	3			
3	7	5	3	113	4-57	
5	8	5	3	72-109	17	
6	9	5	3	79-86	4-57	

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
11	10	5	3	74-83	4-57	L,P
7	11	5	3	75-98	4-57	Q
6	12	5	3	94-128	4-57	L
	13	5	3	93	4-57	
8	14	5	3	82-91	4-57	
6	15	5	3	83-84	4-57	Q
5	18	5	3	64-143	4-57	Q,P
4	19	5	3	61-100	4-57	P
3	20	5	3	dry-155	4-57	
10	22	5	3	98-127	5-57	Q,L
14	23	5	3	91-110	5-57	L,P
14	24	5	3	85-117	5-57	Q,L
19	25	5	3	90-146	11-56	Q,L,P
4	26	5	3	100	11-56	L,P
13	27	5	3	113-129	11-56	Q,L,P
2	28	5	3	112	10-56	Q
2	29	5	3	160	10-56	P
5	30	5	3	54-58	6-56	L,P
14	31	5	3	45-72	6-56	L,P
5	32	5	3	168-185	11-56	Q,L,P
6	33	5	3	173	11-56	Q,L,P
4	34	5	3	148	11-56	
7	35	5	3	123-157	11-56	Q,L,P
	36	5	3	127	11-56	
10	3	5	4	7-40	4-57	Q
7	4	5	4	f-70	4-57	A
	5	5	4			L,P
2	8	5	4	125	3-57	L,P
6	9	5	4	17-107	3-57	Q,L,P
18	10	5	4	9-24	4-57	Q,L,P
7	11	5	4	43-59	4-57	Q,L,P
	12	5	4	98	4-57	
12	13	5	4	38-152	3-57	Q,L,P
3	14	5	4	+0.2	3-57	P,A
	15	5	4	23	3-57	P,A
4	16	5	4	92-156	3-57	L,P
	19	5	4	206	3-57	P
	20	5	4	154	3-57	P
32	21	5	4	86 167	3-57	L
9	24	5	4	53-83	3-57	P
4	25	5	4	f-54	6-56	P,A
9	26	5	4	+2-21	2-57	L,P,A
30	27	5	4	32 99	2-57	L,P
4	28	5	4	156 163	3-57	
	29	5	4	221	3-57	
5	30	5	4	222-261	3-57	
	31	5	4	268	11-57	A
2	33	5	4			L,P
15	35	5	4	91-101	2-57	Q,L,P,A
12	36	5	4	10-24	5-56	Q,L,P

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	1	5	5	119	17	
2	2	5	5	121-153	17	
	3	5	5			
	4	5	5	126	4-57	
5	5	5	5	124-136	1-57	L
	6	5	5	175	3-17	
3	8	5	5	180-235	1-57	Q,L
	9	5	5			
2	12	5	5	70-143	17	
	13	5	5	70	17	
2	15	5	5	292	4-17	L
	18	5	5	299	4-17	
	19	5	5	313	17	
	20	5	5	323	3-17	
2	21	5	5	317-348	1-57	Q,P
5	22	5	5	307-324	1-57	L,P
2	24	5	5	240-245	3-57	P
	27	5	5	570	17	
3	2	5	6	dry-104	1-57	
	6	5	6	dry	12-56	
5	12	5	6	157-180	1-57	
	13	5	6	215	1-57	
4	22	5	6	350-365	1-57	Q,L,P
	29	5	6	dry	1-57	
	35	5	6	505	4-17	
	2	5	7	235	17	
	4	5	7	238	4-17	
	5	5	7	232	17	
	6	5	7	204	11-56	
	9	5	7	283	11-57	Q
	12	5	7	dry	12-56	
	24	5	7			
	20	5	9			Q
	30	5	9			
2	12	5	10			
	13	5	11			Q
2	22	6	1	155-161	12-54	Q
2	26	6	1	dry	12-54	
	27	6	1	151	3-55	
2	35	6	1	145-168	11-54	
2	36	6	1	113-114	11-54	Q
	5	6	2	dry	1-57	
	28	6	2	123	17	
2	33	6	2	124	4-57	
	34	6	2	177	1-57	
2	3	6	3	222	2-57	
5	4	6	3	65-125	2-57	Q
3	5	6	3	65-78	2-57	
10	8	6	3	39-64	2-57	
15	9	6	3	dry-68	2-57	Q,L,P
	11	6	3			
3	14	6	3	57-87	2-57	
2	15	6	3	77	2-57	
3	16	6	3	39-87	2-57	L
17	17	6	3	54-74	3-57	L,P

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	21	6	3	154-175	5-57	
3	23	6	3	58-125	5-57	Q
2	26	6	3	244-321	5-57	
2	27	6	3	148-157	5-57	
5	28	6	3	138-171	5-57	P
	32	6	3	116	5-57	Q
9	33	6	3	94-126	5-57	L,P
13	34	6	3	112-142	5-57	Q,L,P
6	35	6	3	148-180	5-57	L
32	6	6	4	18-98	10-57	L
17	7	6	4	17-30	10-57	
	11	6	4	2	9-57	
	13	6	4	dry	8-57	
18	18	6	4	8-35	9-57	L,P
30	19	6	4	13-61	9-57	Q,L,P
7	20	6	4	75-95	9-57	L
2	24	6	4	154-160	9-57	Q
2	26	6	4	186-191	8-57	Q,P
2	27	6	4	dry	2-18	
15	29	6	4	7-17	9-57	Q,L,P
18	30	6	4	8-23	9-57	Q,L,P
2	31	6	4	74	9-57	
37	32	6	4	16-110	9-57	Q,L,P
14	33	6	4	6-29	9-57	Q,L,P
18	34	6	4	12-85	8-57	Q,P
14	1	6	5	9-18	10-57	
3	2	6	5	183-204	10-57	
	3	6	5	208	10-57	
4	4	6	5	78-91	1-58	L
	5	6	5	79	1-58	
6	6	6	5	39-69	1-58	L,P
9	8	6	5	75-78	1-58	Q,L,P
	9	6	5	99	1-58	L,P
3	10	6	5	107-108	1-58	
6	12	6	5	16-52	10-57	
2	13	6	5	15-20	10-57	
3	14	6	5	dry-117	10-57	
	15	6	5	115	11-53	
2	16	6	5	102-104	11-58	P
	17	6	5			
2	18	6	5	61-62	1-58	
6	19	6	5	65-80	1-58	
3	20	6	5	88-89	2-18	
2	21	6	5	95-170	1-58	P
2	26	6	5	120-153	17	
	27	6	5	100	17	
9	28	6	5	117-127	1-58	Q,L,P
2	29	6	5	109-112	1-58	Q
2	30	6	5	96-108	1-58	
3	32	6	5	122	4-58	P

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
3	33	6	5	132–164	10-57	
5	34	6	5	dry-156	10-57	P
3	6	6	6	57–70	11-56	L,P
	7	6	6	dry	11-56	
2	12	6	6	102–149	1-57	
3	13	6	6	57	1-57	
5	14	6	6	41–46	1-57	
9	18	6	6	45–50	11-56	Q
2	19	6	6	52–53	11-56	
	20	6	6	130	17	
4	21	6	6	76	11-56	
3	22	6	6	63–83	12-56	
3	24	6	6	51–70	1-57	
	25	6	6	75	1-57	P
	26	6	6	113	1-57	
	27	6	6	128	17	
2	28	6	6	103	3-58	
2	30	6	6	dry	11-56	
	31	6	6	181	11-56	
	32	6	6	157	11-56	
	1	6	7			
2	2	6	7	dry	10-56	P
3	3	6	7	16–23	17	L
	4	6	7	dry	8-56	P
5	5	6	7	dry-27	8-56	Q,P
4	6	6	7	29–40	8-56	
6	7	6	7	36–40	8-56	
	8	6	7	37	17	
5	9	6	7	30–34	8-56	
3	10	6	7	20–37	8-56	Q,P
3	11	6	7	21–22	2-18	Q,P
3	12	6	7	20–22	8-56	
3	14	6	7	67	3-60	Q,P
5	15	6	7	30–54	8-56	
6	16	6	7	40–50	8-56	P
4	17	6	7	40–46	8-56	
3	18	6	7	50–56	2-18	
2	19	6	7	66–67	8-56	Q
	20	6	7	66	8-56	
9	21	6	7	48–125	11-56	P
4	22	6	7	58–91	11-56	L,P
3	24	6	7	dry-88	3-60	
2	26	6	7	106–127	11-56	P
2	27	6	7	118–135	10-56	P
2	28	6	7	101–118	11-56	
3	29	6	7	100–128	9-56	
2	30	6	7	80–139	17	
2	31	6	7	153–160	9-56	
	15	6	8	24	8-53	Q
	23	6	8			Q
	3	6	9			
3	4	6	9			
	6	6	9	81	8-53	Q
2	8	6	9			
	5	6	10	230	8-53	Q

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	7	6	10			
3	17	6	10			
	32	6	10			Q
2	12	6	11			
	21	6	11			Q
	32	6	11			Q
	11	7	1	dry	3-60	
	16	7	1	dry	3-60	
2	24	7	1	dry	3-60	
	36	7	1	40	3-45	
	14	7	2			
	5	7	3			
	18	7	3			
	19	7	3			
	21	7	3	dry	2-60	
	27	7	3	145	26	
	28	7	3			
4	5	7	4	27–49	4-58	
29	6	7	4	5-44	6-58	Q,L,P
21	7	7	4	13–68	6-58	Q
2	8	7	4	85–87	6-58	
	13	7	4	13	4-58	
16	18	7	4	8–80	5-58	L,P
24	19	7	4	27–119	5-58	L,P
	25	7	4	180	3-58	
14	30	7	4	19–123	4-58	P
9	31	7	4	22-221	4-58	Q,L,P
	1	7	5	105	2-58	
	2	7	5	97	7-32	
	5	7	5	dry	8-58	
	7	7	5	150	2-58	
2	13	7	5	6	5-58	
	14	7	5	143	19	
3	15	7	5	133–277	2-58	
	18	7	5	dry	2-58	
	20	7	5	dry	2-58	
	21	7	5	70	5-22	
6	22	7	5	86–108	3-58	
14	24	7	5	5–22	3-58	L,P
29	25	7	5	1–21	4-58	L,P
4	26	7	5	169	2-58	
4	27	7	5	dry	2-58	
2	28	7	5	dry	2-58	
	31	7	5			
2	32	7	5	67–144	2-58	
	34	7	5			
7	36	7	5	3–17	4-58	Q,P
3	31	7	6	dry-143	11-56	
	6	7	7	48	8-56	
2	7	7	7	40–53	8-56	

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	8	7	7	99	8-56	
	17	7	7	69	8-56	
	19	7	7	150	8-56	
	20	7	7			
	21	7	7	46	8-56	
2	22	7	7	78-83	8-56	
	26	7	7	dry	8-56	
2	27	7	7	32	8-56	P
5	28	7	7	19-34	8-56	
10	32	7	7	26-121	8-56	Q
2	34	7	7			
5	35	7	7	dry-40	3-60	
2	36	7	7	37-38	8-56	Q
	7	7	8	234	2-51	
	1	7	9			
	3	7	9			
	6	7	9	146	3-51	Q
3	17	7	9	192	3-60	P
5	18	7	9	153-167	11-50	P
3	19	7	9	183	11-50	
6	20	7	9	158-170	11-50	Q,L
	21	7	9	200	11-50	Q
	27	7	9	147	11-50	Q,P
3	28	7	9	147	11-50	Q,L,P
	29	7	9			
3	30	7	9			Q,L,P
	32	7	9			
2	34	7	9			Q,L,P
	35	7	9			
	36	7	9			
3	1	7	10	131-154	3-52	Q,L
4	2	7	10	126-129	10-52	Q,P
	3	7	10			Q
2	4	7	10	143	11-51	P
13	5	7	10	135-186	4-51	Q,L,P
9	6	7	10	114-166	4-51	Q,L,P
8	7	7	10	66-170	4-51	P
5	8	7	10	103-154	4-51	P
5	9	7	10	154-158	4-51	L,P
3	10	7	10			
2	12	7	10			
2	13	7	10	169	11-50	P
4	14	7	10	225-242	12-58	L,P
2	16	7	10			
3	17	7	10			
6	18	7	10	107-170	4-51	
7	19	7	10	168-184	3-51	P
9	20	7	10	179	3-52	Q,L,P
7	21	7	10			P
6	22	7	10	174	11-50	P
2	23	7	10	170-179	11-50	
6	24	7	10	158	11-50	Q,L,P
	25	7	10	182	7-50	P
2	26	7	10	193	11-50	
3	27	7	10			P

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
5	29	7	10	202–209	12-50	L,P
5	30	7	10	194–212	12-51	L,P
3	31	7	10	212	12-51	P
3	32	7	10			Q,P
2	33	7	10	288	11-57	L,P
	34	7	10	291	3-60	
7	1	7	11	182–204	5-58	P
	3	7	11	126	3-52	
2	6	7	11	73	8-56	
2	10	7	11	134	1-53	Q,P
	11	7	11	145	3-52	L
12	12	7	11	154–170	5-51	P
4	13	7	11	68–172	4-51	P
	14	7	11	158	3-52	Q
	16	7	11	113	3-51	L,P
4	17	7	11	78	11-51	Q
3	19	7	11	182–183	10-54	
2	20	7	11	148–165	3-52	
	21	7	11			L,P
	22	7	11	270	7-53	Q
5	24	7	11	168	3-51	Q,P
2	25	7	11			Q,P
	26	7	11			L,P
	27	7	11			L
2	28	7	11	214–263	2-55	
	29	7	11	175	3-52	
	32	7	11			L
2	33	7	11	232	10-54	Q
	34	7	11	196	3-52	L
3	2	7	12	43–64	2-51	Q,P
2	4	7	12	10–14	3-52	
	8	7	12	14	3-52	
	10	7	12	33	3-52	
	12	7	12	dry	8-56	
2	13	7	12	135	3-60	L
2	15	7	12	98	5-55	
	16	7	12	65	2-52	
	18	7	12	32	3-52	Q
2	22	7	12	147–148	5-55	
	25	7	12	203	11-57	Q
	27	7	12	206	10-54	
	28	7	12	182	10-54	P
2	29	7	12	105	3-52	P
	32	7	12	222	12-51	P
2	34	7	12	250	6-53	Q
	2	7	13			
	3	7	13			
	10	7	13			
4	11	7	13	6–12	4-52	
5	12	7	13			

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	13	7	13			
	14	7	13			
	15	7	13			
2	27	7	13	195	12-51	P
	35	7	13	198	11-53	Q,P
	10	7	14			Q
	20	8	1	80	3-53	
2	10	8	4			
	12	8	4	14	1-55	Q
2	17	8	4	25	8-58	Q
7	19	8	4	dry-73	6-58	Q,P
25	20	8	4	18–44	6-58	Q,L
3	21	8	4	6–7	8-58	Q
11	29	8	4	6–28	6-58	Q
13	30	8	4	22–40	6-58	Q,L,P
15	31	8	4	12–57	6-58	Q
13	32	8	4	7–10	6-58	Q,L,P
	7	8	5			L
	14	8	5			L
	19	8	5	dry	8-58	
2	21	8	5	197	8-58	Q
	25	8	5	112	6-58	Q
2	31	8	5	317	8-58	
	12	8	6			L
	14	8	6	194	4-58	
	15	8	6	153	11-58	
	30	8	6	dry	8-58	
	14	8	7	dry	8-58	
	18	8	7	98	8-58	
	19	8	7			
2	21	8	7			
	18	8	8	49	3-51	
	24	8	8	98	8-58	
2	2	8	9			
10	4	8	9	18–34	4-53	Q
8	6	8	9	29	3-60	Q,L
	8	8	9			
2	10	8	9	144	3-51	Q
	18	8	9			Q
	36	8	9			
	1	8	10	18	4-59	Q,L
4	2	8	10	44	12-57	Q,L,P
2	3	8	10	36	3-60	
2	4	8	10	58	3-60	
	6	8	10			
7	8	8	10	57–77	3-60	Q,L,P
2	9	8	10	33	1-51	
8	10	8	10	32–67	3-60	L,P
	11	8	10			Q
	13	8	10			
2	14	8	10	64	3-60	
2	15	8	10	52	3-60	Q
2	17	8	10	60–61	3-60	Q,L
10	18	8	10	64–77	3-60	L,P
11	19	8	10	78–110	5-51	Q,L,P

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
6	20	8	10	58–74	5-51	P
3	22	8	10	57	11-51	
3	23	8	10	63	5-52	Q,P
2	24	8	10	83	3-51	Q
2	24	8	10	83	3-51	Q
	26	8	10	75	4-51	Q,P
5	28	8	10	67–105	5-51	Q,L,P
5	29	8	10	137–151	8-59	P
10	30	8	10	86–158	5-51	Q,P
4	31	8	10	89–127	7-51	
9	32	8	10	125–137	4-51	L,P
	1	8	11	38	5-58	
	4	8	11	f	3-47	A
	6	8	11			
	7	8	11	11	5-51	
4	8	8	11	7	5-51	
	9	8	11			L
2	10	8	11	35	2-51	Q,L
3	12	8	11	47–53	5-58	Q
3	13	8	11	69	3-60	
6	14	8	11	70–101	3-60	
4	15	8	11	28–87	5-58	L,P
	17	8	11	16	3-58	
2	18	8	11	4–24	5-58	Q
2	20	8	11	63	5-51	
3	21	8	11	91–96	5-51	Q,P
18	22	8	11	86–100	8-51	Q,L
14	23	8	11	89–182	8-51	Q,L,P
16	24	8	11	63–130	8-51	L,P
9	25	8	11	110–164	5-51	L,P
18	26	8	11	134–169	9-51	P
16	27	8	11	119–166	9-51	Q,L,P
6	28	8	11	105–121	5-51	L
3	30	8	11	50	3-60	
2	32	8	11	62	3-52	Q
8	33	8	11	115–121	5-51	Q,P
17	34	8	11	146–179	9-51	L,P
11	35	8	11	133–186	9-51	Q,L
13	36	8	11	136–146	4-51	Q,L,P
2	1	8	12	10–11	3-60	A
7	2	8	12	11–26	3-60	Q,A
4	4	8	12	21–26	4-51	A
2	5	8	12	41	4-51	
2	6	8	12	50	4-51	Q
4	8	8	12	28	3-51	P
	9	8	12			Q
3	10	8	12	14	3-60	
6	11	8	12	20	3-60	Q,P,A
5	12	8	12	16–34	3-60	A
2	13	8	12			Q,L
3	14	8	12	25–34	3-60	Q,L,A

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	17	8	12	34	4-51	Q,A
	18	8	12			
2	20	8	12	23	4-51	
5	21	8	12	11–19	4-51	Q,P
6	22	8	12	8–15	5-58	L
2	23	8	12	27	3-60	Q
2	24	8	12			L
	25	8	12			
2	26	8	12	3–14	1-51	
4	28	8	12	6–14	4-51	L
6	30	8	12	24–37	4-51	Q
	31	8	12			
3	32	8	12	13–16	7-51	
3	34	8	12	20	8-53	Q
3	35	8	12	24–47	5-51	
	2	8	13	88	3-52	
	7	8	13	219	5-55	P
	23	8	13			Q
2	24	8	13			
3	25	8	13			
3	26	8	13	70	3-52	
	32	8	13			Q
	35	8	13			
	11	8	14			Q
	23	8	14			Q
	10	8	15			Q
	24	8	15			Q
	33	8	15	233	11-54	Q
	36	8	15	80	11-54	Q
	6	8	16			Q
	18	8	16	109	6-53	Q
	4	9	1	13	10-19	
2	8	9	1	98–147	10-19	Q
2	11	9	1	8	10-19	
2	32	9	1	22	29	
	10	9	2	99	1-54	Q
	17	9	2	73	10-54	Q
	1	9	3	32	10-54	Q
	3	9	3	98	10-54	Q
2	8	9	3	108–130	29	
	15	9	3	23	10-54	Q
	24	9	3	123	10-54	Q
	26	9	3	146	10-54	Q
	28	9	3	23	10-54	Q
	32	9	3	dry	3-60	
	33	9	4	250	6-54	
2	31	9	5	230 231	8-58	
	34	9	6	100	5-53	Q
	5	9	8			L
4	6	9	8	121	5-57	Q,L,P
	8	9	8	173	1-48	P
	18	9	8	128	10-51	
5	1	9	9	8–10	1-48	
	2	9	9	11	10-51	Q
5	6	9	9	39	3-60	Q,L

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	7	9	9	21	10-56	Q
	8	9	9	29	3-60	Q
	10	9	9	18	10-51	Q
2	12	9	9	21–79	10-51	
3	14	9	9	79	3-60	
	18	9	9			Q,L,P
	20	9	9			
	24	9	9			
	26	9	9	97	3-59	P
2	27	9	9	23	12-57	Q,L,P
	2	9	10	51	3-52	
	8	9	10	82	5-54	Q
2	10	9	10	36	3-60	
2	12	9	10	23	11-52	L
	13	9	10	22	11-52	
2	14	9	10	45	5-60	L,P
	15	9	10	59	3-60	
11	16	9	10	39–88	3-60	Q,L,P
	17	9	10	88	3-60	
2	20	9	10	86–87	3-60	Q
2	22	9	10	44	3-60	Q
7	24	9	10	29	3-58	Q,L,P
3	26	9	10			
7	28	9	10	44	7-57	Q
2	30	9	10	22	11-52	Q
3	32	9	10	50	3-60	Q
12	34	9	10	14–50	3-60	Q,L,P
3	18	9	11	12–20	3-60	Q
	20	9	11			A
	22	9	11			Q
2	26	9	11	20	11-52	Q
	34	9	11	15	3-51	
4	36	9	11	28–44	5-58	Q
	4	9	12			P
	6	9	12			
	14	9	12			
13	16	9	12	36–94	5-56	Q,L,P
7	17	9	12	87–93	5-56	
11	18	9	12	17–64	5-56	L,P
6	19	9	12	49–66	4-51	Q,P
	20	9	12			L
12	21	9	12	46–75	4-51	Q,P
3	22	9	12	35	3-60	A
5	23	9	12	17	3-60	Q,P
5	24	9	12	13–15	3-60	Q
3	26	9	12	17	3-57	Q,L,A
	27	9	12	22	3-58	
8	28	9	12	29–36	11-51	Q,L
2	30	9	12	86	11-57	
3	31	9	12	100	11-58	

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	32	9	12	10	10-29	
	33	9	12	21	11-51	
3	34	9	12	12	3-51	
	35	9	12	17	10-57	Q
3	1	9	13	f-63	5-56	L,A
	4	9	13	71	2-54	
2	5	9	13	103	5-56	
	6	9	13			
9	7	9	13	19–27	5-56	Q,L
	8	9	13	dry	2-53	
	10	9	13	dry	5-56	
3	12	9	13	18–78	5-56	
	13	9	13	89	5-56	
10	14	9	13	dry-87	5-56	
	16	9	13			
	17	9	13			
3	20	9	13	131	2-53	Q
	21	9	13			
2	23	9	13	111–112	1-51	Q,L,P
	24	9	13	90	3-60	
2	26	9	13			
2	27	9	13			
	31	9	13			Q
2	34	9	13			
5	1	9	14	63–115	5-56	L
2	2	9	14	125	1-53	
	4	9	14	dry	5-56	
	18	9	14			
	20	9	14			
	24	9	14			Q
	27	9	14	160	12-51	P
	32	9	14			Q
	10	10	1			
2	6	10	2	dry	12-59	
	7	10	2	dry	12-59	
	30	10	2	dry	12-59	Q
	32	10	2	25	10-54	Q
	2	10	3			
	3	10	3	35	11-19	
	4	10	3	47	5-54	
3	6	10	3	f-13	11-19	Q,A
	15	10	3			
	20	10	3			
	22	10	3			
	23	10	3	15	5-58	
	27	10	3			Q
	30	10	3			
2	35	10	3	108	10-54	Q
4	3	10	4	147–149	6-53	
	6	10	4			
	7	10	4			
	8	10	4	110	6-53	Q
	11	10	4	dry	6-53	
	1	10	5			
	2	10	5			L

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	3	10	5	223	4-58	
4	11	10	5	230–280	19	Q,L
	13	10	5	dry	19	
	21	10	5	dry	19	
	23	10	5	dry	19	
	3	10	6	dry	8-58	
7	5	10	6	175–203	8-58	Q,L
3	6	10	6	200	8-58	
2	20	10	6	120	5-55	L
2	1	10	7			
4	2	10	7	165–200	19	
	3	10	7	180	4-53	Q
2	4	10	7	182	8-58	
2	5	10	7	180–261	1-58	Q
3	6	10	7	243–280	1-58	L,P
3	1	10	8			
	2	10	8	206	1-58	
	4	10	8	70	5-58	Q
	5	10	8			L
	32	10	8			L
2	4	10	9	98	10-58	Q,L,P
2	7	10	9	66	11-52	Q,L,P
	23	10	9	58	11-52	Q
3	24	10	9	73	5-54	
4	30	10	9	35–41	3-52	Q
17	31	10	9	29–44	4-60	L
	4	10	11	70	5-58	
	7	10	11	dry	9-52	
2	8	10	11	55–62	11-55	Q,L,P
3	18	10	11	66	3-60	Q,L,P
	19	10	11	52	5-58	
3	20	10	11	74	3-60	L
3	30	10	11	77	3-60	L
	34	10	11			
	2	10	12	135	10-55	
2	4	10	12	183	11-55	Q
	9	10	12	150	2-53	L,P
4	10	10	12	dry-102	11-55	Q,P
3	12	10	12	dry-78	10-52	P
	13	10	12	52	11-56	L
6	14	10	12	51–62	3-60	
6	15	10	12	55–64	5-56	Q,P
6	16	10	12	58–65	3-56	
	19	10	12			P
7	20	10	12	dry-93	11-52	Q,L,P
2	21	10	12	47	5-56	Q,L
8	22	10	12	37–38	3-60	Q,L,P
3	23	10	12	29	3-60	L
5	24	10	12	34–36	3-60	Q,P
5	26	10	12	40–71	3-60	L

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	27	10	12	43	3-60	L
3	28	10	12	59–63	5-56	
	30	10	12	dry	11-52	L
	4	10	13	dry	11-52	
	14	10	13	253	11-52	Q,L,P
	18	10	13	306	1-53	
	19	10	13	292	1-53	L,P
	22	10	13	282	1-53	L
3	24	10	13	dry-184	11-52	Q
	29	10	13	218	2-54	P
3	30	10	13	256–283	2-54	L
2	31	10	13	186	2-54	
2	32	10	13	162	5-56	L
	25	10	14			Q
	36	10	14	242	2-54	Q,L,P
	4	11	3			
5	7	11	3	28–56	4-55	
2	8	11	3	48	5-55	L
	15	11	3	108	5-55	
	16	11	3	110	19	
	19	11	3	5	56	
2	20	11	3	10–16	56	
	21	11	3	55	11-55	
2	27	11	3	28–63	5-55	
4	28	11	3	dry-28	6-53	
	29	11	3	dry	5-58	
3	30	11	3	f-11	56	Q,A
3	32	11	3	9–11	6-53	
	33	11	3			Q
2	34	11	3	36–40	6-53	
	1	11	4	dry	9-53	
	3	11	4			
2	4	11	4	35	3-55	L
2	6	11	4	48	6-53	
	15	11	4			
2	18	11	4	25–75	6-53	
12	19	11	4	108–180	6-53	Q,L
	20	11	4			
	23	11	4			L
	26	11	4			
	27	11	4			L
3	28	11	4	18	19	
4	29	11	4	87	3-55	
12	30	11	4	134–159	6-53	Q
	31	11	4	111	10-50	
5	32	11	4	125–132	6-53	Q,L
2	33	11	4			Q,L
2	35	11	4	31–33	5-55	
	1	11	5	dry	6-53	
4	2	11	5	99–132	6-53	
	7	11	5	155	10-52	
3	12	11	5	25–68	10-55	
3	13	11	5	85–125	6-53	
	14	11	5	26	6-53	
9	24	11	5	160	6-53	Q,L

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
	28	11	5			
	35	11	5	dry	3-55	
3	17	11	6	262-288	12-50	Q,L
2	18	11	6			L
2	20	11	6	252-280	8-50	Q,L
	22	11	6			L
	24	11	6			L
	26	11	6			L
3	29	11	6			
19	30	11	6			L
2	31	11	6	172-196	8-58	L,P
4	32	11	6			
	35	11	6			L
2	8	11	7			
	13	11	7	269	10-52	
	16	11	7			
2	17	11	7			
16	18	11	7			
4	20	11	7			
2	22	11	7			
	26	11	7	250	19	
2	30	11	7	197-310	1-58	Q
6	31	11	7	243-247	1-58	
15	32	11	7	147-241	1-58	Q,L,P
2	33	11	7			
	34	11	7	2	1-58	Q,P
	1	11	8	dry	1-58	Q
6	2	11	8	178-188	7-55	Q,L,P
8	3	11	8	157-167	10-48	Q,L,P
3	10	11	8	140-144	1-58	Q,L,P
2	11	11	8	156-168	6-52	Q,L,P
4	12	11	8	226	1-58	
	13	11	8			
10	14	11	8			
2	15	11	8	159	1-58	L,P
2	16	11	8	dry	1-58	L
8	17	11	8	178	1-58	L,P
2	19	11	8	142-144	1-58	L,P
2	20	11	8	166-172	1-58	Q,P
3	21	11	8			
7	22	11	8	170	1-58	Q,P
10	24	11	8			
	25	11	8			
7	26	11	8	169-200	1-58	Q,L
2	27	11	8			
	28	11	8	168	1-58	
2	29	11	8	139	1-58	L,P
4	30	11	8	117-132	1-58	L,P
	31	11	8	109	1-58	Q,L,P
2	32	11	8	129	3-58	

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A - artesian flow

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	33	11	8	131	1-58	L
2	35	11	8	167-210	12-57	Q,L,P
	3	11	9			
2	6	11	9	166-170	12-57	
	7	11	9	155	4-53	
2	12	11	9	169-182	1-58	
3	13	11	9	144-158	7-59	L,P
	14	11	9	157	7-52	
	15	11	9	156	1-58	
2	17	11	9	131-134	3-58	
	18	11	9	dry	4-51	
2	19	11	9	124	4-53	P
2	22	11	9	100-106	1-58	Q
2	23	11	9	133-143	1-58	Q
7	24	11	9	133-136	1-58	L,P
2	25	11	9	111	1-58	L,P
	26	11	9			
	27	11	9			
6	28	11	9	80-95	1-58	L,P
2	29	11	9	86-93	1-58	L,P
3	30	11	9	93-116	2-58	Q,P
2	31	11	9	114-145	1-58	Q,P
3	32	11	9	94	6-54	Q
3	33	11	9	64-76	1-58	P
6	34	11	9	81-94	3-58	Q,L
7	36	11	9	98-112	1-58	Q,L,P
	4	11	10	205	7-56	
2	23	11	10	dry	7-59	
	26	11	10	dry	9-52	
3	36	11	10	119-122	1-58	Q,L,P
	1	11	11	33	11-55	Q
	2	11	11	90	11-55	Q
	5	11	11	204	12-56	Q,L,P
2	6	11	11	dry-254	9-55	
	7	11	11	202	10-56	Q,L,P
	8	11	11	198	10-55	Q,P
	9	11	11	123	10-56	Q,L,P
	18	11	11	213	12-52	
	20	11	11	dry	12-52	
	23	11	11	311	12-29	L
2	30	11	11	dry-124	10-52	
	32	11	11	dry	9-55	
	33	11	11	dry	11-55	
	34	11	11	78	11-52	
3	12	11	12	268	11-55	Q
3	14	11	12	dry	9-52	L
2	18	11	12	242	9-55	Q
	22	11	12	dry	9-52	L
	24	11	12	dry	12-55	
2	26	11	12	156-157	9-55	Q,L,P
	29	11	12	177	11-52	
4	32	11	12	176-188	10-55	Q,P
4	19	11	13	246-280	5-56	Q,L,P
	24	11	13			Q
	29	11	13	322	3-56	L,P

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. W.	FEET	DATE	
2	31	11	13			L,P
4	36	11	13	282–303	9-55	L,P
2	14	11	14	25	3-56	L,P
2	34	12	4	137	10-53	
	34	12	8	217	2-53	
	35	12	9	256	11-57	P
	36	12	9	222	11-57	P
	31	12	10	156	17	
	34	12	10	dry	7-56	
	35	12	10	dry	1-58	Q
	34	12	11	dry	9-52	
	35	12	12	206	5-58	Q,L,P
		N.	**E.**			
	1	1	4	70	2-53	
	2	1	4	dry	1-58	
	3	1	4	69	1-58	
	11	1	4	42	1-58	
3	12	1	4	dry-4	1-58	P
4	14	1	4	49–113	1-58	P
	6	1	5	dry	1-58	
	18	1	5			Q
	36	1	5	130	17	Q
	32	2	4	dry	1-58	
	3	3	1	17	3-54	Q
	2	3	2	234	3-55	L
	31	3	7			
	17	3	8			
	29	3	8			
	33	3	8			
	34	3	8			
4	1	4	1	110–136	3-54	Q
3	2	4	1	85–98	3-54	Q,L
5	3	4	1	76–98	4-54	Q,P
2	4	4	1	90–92	4-54	L,P
9	5	4	1	66–97	4-54	Q,L,P
10	6	4	1	68–80	11-54	Q,L,P
15	7	4	1	76–101	11-54	Q,P
10	8	4	1	97–110	4-54	L,P
7	9	4	1	102–136	4-54	Q,L,P
4	10	4	1	125–152	4-54	L,P
6	11	4	1	90–120	3-54	L
8	12	4	1	122–124	3-54	Q,P
7	13	4	1	146–205	3-54	
5	17	4	1	116–132	3-54	L
3	18	4	1	dry-113	3-54	L
	21	4	1	142	3-54	Q,P
3	23	4	1	383	3-54	L
2	24	4	1	223	3-54	
	27	4	1	124	3-54	
	29	4	1			Q
	32	4	1	65	3-54	L,P

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T - thermal water
A - artesian flow

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. E.	FEET	DATE	
	33	4	1	105	3-54	
	35	4	1	191	3-54	L,P
	1	4	2	dry	3-54	
3	7	4	2	127-131	3-54	Q
2	8	4	2	285	3-55	
2	10	4	2	235	6-55	
2	17	4	2	126-163	11-54	Q
	18	4	2	180	16	
	20	4	2	dry	3-54	
	16	4	3	102	6-55	P
	22	4	3	115	5-54	
2	23	4	3	103	5-54	Q,L
	24	4	3	55	3-55	
	26	4	3	dry	5-54	
	5	4	4	16	3-55	
6	19	4	4	40-60	5-54	Q,L,P
2	24	4	4	16-17	12-54	
	11	4	11	dry	55	
	16	4	11	dry	55	
	24	4	15	280	33	P,Q
5	6	5	1	97-118	11-54	P
6	7	5	1	79-88	11-54	Q,L,P
3	8	5	1	77-112	12-54	Q,P
2	10	5	1	198-200	3-55	
	11	5	1	dry	11-54	
	13	5	1	dry	4-54	
2	14	5	1	dry-194	11-54	
2	15	5	1	85-115	11-54	
	16	5	1	98	3-55	
5	17	5	1	51-74	11-54	Q,L
7	18	5	1	48-51	11-54	Q,P
5	19	5	1	48	10-54	Q,L,P
7	20	5	1	50-51	10-54	Q,L,P
	21	5	1	80	3-55	Q,L
3	22	5	1	81-97	5-54	L
2	23	5	1	72	5-54	Q
	26	5	1	128	11-54	
4	27	5	1	63-92	4-54	L,P
	28	5	1	77	6-55	P
8	29	5	1	56-60	11-54	Q,L,P
5	30	5	1	56-59	11-54	Q,L,P
9	31	5	1	55-66	11-54	Q,L,P
11	32	5	1	64-71	4-54	Q,L,P
9	33	5	1	62-67	3-54	Q,P
3	34	5	1	68	11-54	P
4	35	5	1	dry-111	3-54	L
	3	5	5	dry	55	
	18	5	8			
	3	5	10			
	7	5	13			
2	15	5	14	207	31	Q,L
2	4	5	15	400	05	Q,L,P
	11	5	17			
	6	5	18			
	18	5	18			

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. E.	FEET	DATE	
	1	6	1	dry	58	
2	31	6	1	204	11-54	L
	4	6	6	85	17	Q,P
	30	6	11	150	02	Q
	35	6	12			
	19	6	14	75	1-59	
	31	6	14			
2	32	6	14	130	4-59	P
4	6	6	16	262-268	28	Q,L,P
	2	6	17			
	11	6	17			
	26	6	17			
	12	7	1			
	10	7	2			
	16	7	2	20	1-59	
	28	7	3			
	30	7	3	dry	8-53	
	26	7	6			Q
	33	7	8	dry	55	
	34	7	9			Q
	34	7	13			
	1	7	16			
	8	7	16			
	18	7	21	dry	60	
	10	7	23	dry	5-60	
	30	7	23			
	1	8	3	8	29	
2	12	8	3	14-27	11-19	P
	31	8	3			
	5	8	4	7	29	
2	6	8	4	6 12	11-19	
4	7	8	4	11-35	11-19	P
2	8	8	4			
2	18	8	4	42 45	11-19	Q,P
	1	8	5	310	58	
	8	8	5	dry	29	L
	16	8	5	100	2-57	Q,L
	5	8	8			
	10	8	13			
2	15	8	13			
	5	8	14			
	13	8	16	400	56	
	2	8	17			
	31	8	17			
2	20	8	23	300	60	P
2	1	9	1	60	29	Q,L,P
	2	9	1	46	4-13	P
	3	9	1	65	4-13	
	6	9	1	20	4-13	P
	13	9	1	51	10-19	

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. E.	FEET	DATE	
	16	9	1	86	10-19	Q,P
3	18	9	1	15 25	10-19	P
	21	9	1	79	10-19	P
	29	9	1	65	4-13	
	30	9	1	45	4-13	
	31	9	1	35	4-13	
3	32	9	1	19 70	4-13	
	35	9	1	65	4-13	
	2	9	2	dry	29	
5	3	9	2	4-14	11-19	Q,P
2	4	9	2	8-16	11-19	
	6	9	2	24	11-19	
	7	9	2	51	10-19	
3	8	9	2	35-38	10-19	Q,P
	10	9	2	21	10-19	
2	12	9	2	6-13	10-19	
3	14	9	2	14-26	10-19	P
	15	9	2	25	29	L,P
	18	9	2	54	10-19	P
	19	9	2			P
3	20	9	2	38 48	10-19	Q,P
2	22	9	2	28 35	10-19	P
2	26	9	2	19-21	10-19	Q,P
	27	9	2	24	10-19	Q,P
	28	9	2	32	10-19	P
	34	9	2	45	29	
2	1	9	3			
2	2	9	3	35-38	11-19	
3	3	9	3	33-42	11-19	P
	4	9	3			
	5	9	3			
	7	9	3	45	10-19	P
4	10	9	3	30-32	11-19	Q,P
2	11	9	3	29-31	11-19	
	13	9	3			
	14	9	3	32	11-19	P
2	15	9	3	30-36	11-19	P
	18	9	3	dry	11-19	
3	19	9	3	f-9	11-19	Q,P,A
	20	9	3	dry	11-19	
	22	9	3	42	9-17	
	24	9	3			L
2	26	9	3	32	11-19	
2	27	9	3	33	11-19	
	28	9	3	38	9-17	
2	29	9	3			
	30	9	3	f	12-19	P,A
	32	9	3	2	9-17	Q,A
	33	9	3	f	29	A
2	34	9	3	21-29	11-19	
3	35	9	3	22-25	11-19	P
2	36	9	3			
2	6	9	4	27	29	
3	7	9	4	22-25	11-19	
4	8	9	4	17-22	11-19	Q,P

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. E.	FEET	DATE	
2	16	9	4			
	17	9	4			
	18	9	4	25	11-19	L,P
	20	9	4	6	29	
2	21	9	4			
	28	9	4			
2	30	9	4			
4	31	9	4			
	1	9	5	dry	5-58	
	8	9	5	dry	58	L
	32	9	5			
	33	9	6	dry	58	
	13	9	7			
	13	9	11	dry	59	
	8	9	14			
	9	9	14			
	29	9	14			
	35	9	17	317	01	Q
	27	9	19			Q
	3	9	21			P
	23	9	21	4	9-60	P
2	28	10	1	65–66	11-19	
2	35	10	1	56–60	11-19	Q
	25	10	2			
2	26	10	2	dry-61	11-19	P
3	32	10	2	23	11-19	P
2	6	10	3			
2	7	10	3			
	8	10	3			
	10	10	3			
	11	10	3	114	11-19	
	12	10	3	111	11-19	
	14	10	3	56	11-19	
2	15	10	3	75	11-15	Q,L
	18	10	3			
	22	10	3	87	11-19	
	23	10	3	60	29	P
	25	10	3	37	11-19	
	27	10	3	9	11-19	P
	30	10	3			
	32	10	3	9	29	
3	34	10	3	12–56	11-19	
	35	10	3	33	11-19	P
	4	10	4			
2	6	10	4	98–102	11-19	Q
	32	10	6			
	22	10	14			
	7	10	15			
	23	10	15	14	11-17	Q
2	29	10	15			

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NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. N.	RGE. E.	FEET	DATE	
	26	10	18	565	02	Q
	21	10	20			
	18	10	21	+2	6-60	P,T,A
	21	10	21	82	1899	Q
	1	11	2	dry	9-17	
	5	11	2			
	7	11	2	52	2-54	L
5	8	11	2	f-8	2-54	Q,P,A
2	22	11	2	12	10-54	Q
	26	11	2	41	10-54	
	27	11	2	2	10-54	Q,P,A
	35	11	2	42	2-54	
	8	11	3	62	2-54	
	11	11	3	190	2-54	Q
	20	11	3	45	2-54	Q
2	30	11	3	45	10-54	L,P
	35	11	3	65	10-54	
	14	11	5			
	15	11	5			
	16	11	5			
	18	11	6			
2	11	11	7	dry	10-54	Q
3	14	11	7	dry	10-54	
	24	11	7			
	6	11	8	25	5-54	
7	7	11	8	dry-25	5-54	Q,L,P
3	8	11	8	4–18	5-54	Q
2	9	11	8	20	5-54	Q
	10	11	8	6	55	L,P
3	17	11	8	3–13	12-19	L,P
2	18	11	8	20–26	5-54	Q,L,P
	19	11	8	12	12-19	
	29	11	8	10	12-19	
	13	11	9			
	17	11	9	55	12-19	Q,L
	29	11	10			Q
	5	11	17	f	6-60	
	9	11	18			
	15	11	19	1	6-60	P
2	36	11	21	8	6-52	Q
2	28	12	2	f-36	11-54	P,A
3	32	12	2	f-12	2-54	L,P,A
2	33	12	2	f	2-54	Q,P,A
	31	12	2	56	3-55	Q,L,P
	4	12	6	26	10-54	Q
	25	12	6	19	2-54	Q
	1	12	15	0.5	5-60	P
	16	12	16	400	5-60	
	4	12	17			
	17	12	17			
	20	12	17			
2	18	13	17	300	5-60	Q
	19	13	17			P
	28	13	18	dry	5-60	
	33	13	19	75	5-60	Q

WELLS (continued

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
	12	1	4	156	3-58	
18	13	1	4	13–152	3-58	Q,L,P
6	14	1	4	137–182	3-58	Q,L,P
4	15	1	4	170	3-58	
5	18	1	4	9–21	3-58	
2	22	1	4	164–200	3-58	Q,P
13	23	1	4	90–177	3-58	L,P
3	24	1	4	dry-8	3-58	
14	28	1	4	dry-72	3-58	P
4	29	1	4	84–125	3-58	Q,P
5	32	1	4	41–120	3-58	Q,P
2	33	1	4	dry-3	3-58	L
	7	1	5	305	3-58	Q
	18	1	5			P
	33	1	7			Q
	12	2	3			
	22	2	3			Q
	5	2	4	20	3-58	
4	8	2	4	dry	3-58	
3	18	2	4	148–150	3-58	
	19	2	5			
several	29	2	5			T
several	30	2	5			T
several	31	2	5			T
several	32	2	5			T
several	33	2	5			T
	29	2	7			
	22	3	2			Q
	1	3	3			
4	3	3	4			
	19	3	4			
several	3	3	5			T
3	4	3	5			T
several	5	3	5			T
several	8	3	5	f	23	Q,P,T,A
several	9	3	5			T
3	10	3	5			Q,T
2	11	3	5			T
several	12	3	5			T
several	13	3	5			T
3	14	3	5			T
2	18	3	5	51	4-19	Q
	32	3	5	0	4-19	A
	35	3	5			
several	17	3	6			T
several	18	3	6			T
	19	4	5	102	23	
	14	5	6	42	23	
2	18	5	6	60–80	23	P
	22	5	6	75	23	P

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A - artesian flow

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
2	24	5	6	32–34	23	L,P
2	24	5	7	f-2	23	L,P,A
3	27	6	5			
	36	6	5			
	19	6	9			
	29	6	9			
	11	6	10			
	16	6	10			T
	26	6	10			
	8	6	11			
	16	6	11			
	19	6	14	9	5-52	Q
	24	6	15	9	5-52	Q
	5	7	9			A
6	8	7	9	f	23	Q,P,A
	13	7	9			
3	16	7	9			A
	17	7	9	f	23	Q,L,P,A
2	18	7	9	f	23	Q,P,A
5	20	7	9			A
2	21	7	9			A
5	22	7	9			A
	24	7	9			A
3	26	7	9			A
2	27	7	9			A
2	30	7	9			A
	31	7	9			
	33	7	9			Q,A
	25	7	10			
	28	7	10			
	30	7	10			A
	4	7	15	8	5-52	Q
	6	8	9			
	11	8	10			
2	2	8	11	12	4-20	
	8	8	11	40	4-20	
3	10	8	11			
3	12	8	11			
3	14	8	11			
2	24	8	11			
	26	8	11			
	1	8	12	14	5-52	Q
	7	8	12	+30	3-50	Q,A
2	18	8	12	80	4-20	
	30	8	12			Q
	31	8	12			
	32	8	12			
	33	8	17			Q
	8	9	9			Q
	22	9	9			Q,A
	35	9	9			Q
	2	9	12			Q,P,T,A
	10	9	12	0	2-14	A
	5	9	18	22	6-52	Q
	2	9	21			Q

WELLS (continued)

NUMBER[1]	LOCATION (SBBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
	SEC.	TWP. S.	RGE. E.	FEET	DATE	
	3	9	21			Q
	36	10	5			Q
	5	10	6			Q
	4	10	7			
	19	10	7			Q
	36	10	9			
	18	10	10			Q,A
	5	10	16	38	6-52	Q
	9	11	6			Q
	11	11	6			Q
	25	11	8	dry	60	
	2	11	13			T
3	10	11	13			Q,T
	11	11	13			T
	12	11	13			T
2	23	11	13	f	63	T,A
	28	11	13			T
	34	11	13			
	18	11	15	f	40	A
2	7	11	16			
	15	11	20	35	3-25	Q
	5	11	21			
	6	11	21			
	28	11	21	10	7-61	
	10	12	8			Q
	29	12	9	dry	60	
	34	12	9	dry	60	
	26	12	10	8	17	A
	34	12	10			
	10	12	13			T
	16	12	14			
	3	12	15	+9	2-61	P,T,A
	4	12	15	+5	2-61	P,A
	23	12	15	+23	2-61	P,A
	25	12	15	+10	2-61	Q,P,A
	27	12	15	+25	9-48	Q,A
	18	12	16	64	2-61	
	24	12	16	268	17	Q,L
	32	12	16	51	2-61	
	35	12	16	64	2-61	
	9	12	18	5	10-50	Q
	13	12	19			Q
	15	12	19	dry	7-60	
	5	13	10	28	17	
	10	13	10	45	17	
	9	13	14			T
	3	15	12	+9		T,A
	8	16	16			T
	16	16	17			T

[1]one well only unless otherwise noted
[2]+ indicates pressure head; f indicates flowing
[3]data available from published literature or Southern Pacific files on:

Q - quality
L - logs
P - performance
T - thermal water
A - artesian flow

GAGING STATION	LOCATION		
	SEC.	TWP.	RC
COLORADO RIVER[2]			
Colorado River below Davis Dam	1	32S.	66
Colorado River near Topock	13	15N.	21
Colorado River below Parker Dam	16	2N.	27
Colorado River below Palo Verde Dam	2	4N.	22
Colorado River at Imperial Dam	9	15S.	24
Colorado River at Yuma	35	16S.	22
ANTELOPE VALLEY			
Big Rock Creek near Valyermo	20	4N.	9
Little Rock Creek near Little Rock	3	4N.	11
Oak Creek near Mojave	15	11N.	14
MOJAVE RIVER BASIN			
Deep Creek near Hesperia	18	3N.	3
West Fork Mojave River near Hesperia	18	3N.	4
Mojave River at lower narrows near Victorville	29	6N.	4
Mojave River at Barstow[2]	31	10N.	1
Mojave River at Afton[2]	18	11N.	6
SALTON SEA BASIN			
Salton Sea near Westmoreland	21	11S.	11
Coyote Creek near Borrego Springs	23	9S.	5
Whitewater River at White Water	2	3S.	3
Snow Creek near White Water	33	3S.	3
Tahquitz Creek near Palm Springs	22	4S.	4
Palm Canyon Creek near Palm Springs	11	5S.	4
Andres Creek near Palm Springs	3	5S.	4

[1] Data from U. S. Geol. Survey Water-Supply Paper 1714 and Surface Water Records of California, 1961: v. 1.
[2] Flow regulated by dams upstream; numerous diversions
[3] Mount Diablo Base and Meridian
[4] Gila and Salt River Base and Meridian
[5] San Bernardino Base and Meridian
[a] several days in 1942
[b] no flow for periods in several years
[c] Salton Sea level reported in feet below mean sea level

ARGE DATA[1]

DISCHARGE EXTREMES				DISCHARGE AVERAGE		DRAINAGE AREA
MAXIMUM		MINIMUM		YRS.	CFS.	SQ. MI.
Date	Cfs.	Date	Cfs.			
4/52	31,200	8/50	0	12	14,180	169,300
1/42	35,700	2/35	375	17	20,260	172,300
2/37	42,400	[a]	0	27	13,580	178,800
3/58	24,300	1/57	1,540	5	10,060	182,200
9/39	40,800	8/34	538	27	12,740	184,600
9/39	34,900	3/56	41			242,900
3/38	8,300	11/51	0.7	38	15.3	23.0
3/38	17,000		[b]	29	16.2	49.0
4/58	22		[b]			15.8
3/38	46,600	7/61	0	50	68.3	137
3/38	26,100		[b]	50	40.5	74.8
3/38	70,600	8/51	6	38	75.5	530
3/38	64,300		[b]	31	25.6	
2/32	3,550	6/61	0	12	2.22	
2/07	−195.9[c]	11/24	−251.6[c]			8,360
7/51	3,800	8/59	1.1	11	243	144
4/58	1,500	1/57	0	13	10.5	57.4
2/61	85	6/61	2.1	9	6.72	11.0
8/54	1,570		[b]	14	2.62	16.7
2/37	3,850		[b]	25	4.36	94.0
8/54	1,960	6/61	0	13	1.92	8.78

= cubic feet per second

Geologic History

See editor's note on page 33. Those publications considered to be the most pertinent to the areas covered by the survey in PART II and PART III are listed in the Selected Bibliography, page 92.

Index to Mines

Acme, 112
A. D. Daly, 75
Afton Canyon, 173, 177
Afton Canyon District, 172
Alabama-Mountain View-Snowbird Group, 146
Alamo Consolidated, 74
Alarm, 130
Altuda, 55
Alvord, 125
Amargo, 73
Amboy Crater, 181, 182
Amboy Deposits, 173
American Borax Co., 68
American Opal Co., 88
Andreen, 138
Anita, 13
Apex, 49
Archer, 13
Argentum Group, 146
Arrastre, 47
Arrowhead, 132
Ashford, 45
Atlas, 20
Austin Group, 40
Avenal Canyon, 14
Avenal Canyon Extension, 14
Azucar, 120
Azurite, 41

B and B, 42
Bagdad-Chase, 115
Ball, 160
Ball Kramer, 77
Barium Queen, 67
Barrett, 168
Basin, 132
Baxter, 132
Baxter and Ballardie, 175
Bean Canyon, 77
Bell Gilroy, 148
Bertram, 186
Beryl Group, 61
Bessemer, 130
Big Bully, 62
Big Butte, 45, 108
Big Four, 106
Big Horn, 122, 172
Big Medicine, 66
Big Reef, 138
Big Three, 50
Big Tree, 50
Billie Boy, 116
Billie Burke, 61
Billwaley, 15
Bismark, 146
Bissell, 77
Black Bonanza, 138
Black Butte, 138
Black Eagle Group, 79
Blackfoot, 145
Blackfoot-Golconda, 145
Black Hills, 116
Black Jack, 131
Black Mountain, 139
Black Mountain Group, 81
Black Mountain and Reserve, 76
Black Stone, 140
Blue Bonnet, 41
Blue Eagle, 53, 116
Blue Ridge, 16
Bluett, 62
Blue Vase, 151
Blumenberg, 162
Bobtail, 52
Bomber Moon, 167
Bonanza King, 148
Bonner, 106
Boron Dry Lakes, 88
Branch, 49
Bristol Dry Lake, 183
Brown Silica Deposit, 182
Brown-White, 70
Brubaker-Mann, 162
Bryan, 42
Buena Suerte, 150
Bullion Range, 115
Bumper Group, 105
Burcham, 147
Burning Moscow, 146
Burton-Brite-Blank, 53
Butler Estate, 11
Butte, 45
Butte Lode, 45
Butte Wedge, 45

C & K, 148
Cactus, 53
Cactus Queen, 53
California, 21, 109
California Comstock, 149
California Salt Co., 85
Calmont, 112
Cal Rock, 28
Calsilico, 81
Calumet, 112
Captain, 177
Carbonate, 148
Castle, 118
Cave Canyon, 132, 175
Cave Mountain, 132
Celestial Deposit, 154
Centennial, 162
Cerro de La Plata, 142
Chalmers, 170
Chausse, 123
Cherokee, 120
Chiquita, 13
Christie, 111
Chubbuck Lime Co., 174
Chubbuck Reserve, 175
Chubbuck Scheelite, 151
Climax, 51
Clipper Mountain, 119
Clipper Mountains, 152
Coalinga, 23
Coalinga Asbestos, 20
Coarse Gold, 122
Cole, 13

Colorado Camp Group, 40
College Girl Group, 40
Columbia-Geneva, 131
Columbus, 161
Comanche, 107
Comet, 145
Complex Minerals, 150
Confidence, 40
Consolidated, 15, 44, 146, 150
Contention, 122
Copper Basin Group, 39
Copper Butte, 108
Copper Chief, 40, 124
Copper Gulch, 108
Copper King, 103
Copperola, 38
Copper Queen, 39
Copper Strand, 102
Cotton Ball Borax, 68
Cottonwood Creek, 23, 29
Crater, 126
Crescent, 53
Croesus Group, 45
Croesus Penimore, 44
Cronese, 133
Cronese Mud, 168
Crystal Springs, 42
Cudahy, 81
Cumberland, 114

Daisy, 127
Daly, 75
Dandy Group, 47
Dawn, 61
Dawson, 14
Decker, 40
Del Mexico, 13
Derby Acres, 24
Denver, 126
Desert Butte, 102
Desert Gold Group, 124
Desert Queen, 54
Desert Rock Milling Co., 69
Devine, 119
Dicco, 28
Dictator, 189
Dietzman Group, 148
Discovery, 51
Dish Hill, 181
Dono-han, 62
Double Standard, 51
Dougherty Pit, 30
Dull Pick, 116
Du Pont, 190
Dutch Oven, 121

Ebony, 130
Echo, 51
Elephant-Eagle, 52
Elephant Group, 52
Elsey Pit, 28
Elsie, 115
Enterprise?, 116

Eureka, 23, 59
Evening Star, 175
Ewrite, 167
Excelsior, 52
Exposed Treasure, 54

Falls, 146
Fairview, 50
Farway, 181
F. D. Roosevelt, 115
Fearnot, 48
Ferberite, 153
Florence, 116
Fluorite Hill, 173
Ford, 113
Four Star, 54
Francis claim, 14
Fredero, 51
Fremont and Diamond Salt Cos., 85
French, 40
Friedana, 14

Galena Group, 40
Galena King, 144
Garanger, 43
Garfield, 145
Garfield-Thunderer, 145
Gasko Group, 16
Gateway, 43
Gem, 12, 51, 74, 161
Gemco, 142
Getchell, 126
Globerson, 55
Glorietta and Discorded claims, 44
Gold Badger, 40
Gold Banner, 103
Gold Basin, 128
Gold Belt, 117
Gold Belt (part), 48
Gold Butte, 107
Golden Badger, 43
Golden Eaglet and Queen, 39
Golden Queen, 51
Golden Rule Claim, 45
Golden State, 47
Golden View, 39
Golden West, 128
Golden Witch, 56
Gold Hammer, 121
Gold King, 47, 50
Gold Peak, 40, 115
Gold Quartz, 55
Gold Reef, 119
Gold Reef Group, 119
Gold Ridge, 123
Gold Standard, 118
Gold Turtle, 124
Good Hope, 44
Grace Group, 59
Grandview, 113
Gray Eagle, 51
Green and Collins, 24
Greenback, 103

Green Dragon, 39
Green Hornet, 172
Grey Eagle Group, 79
Griffith, 29
Gum Tree, 54
Gunn, 168

Haeger, 50
Halsey, 75
Hamilton, 50
Hancock, 71
Haney and Lee, 102
Harvard Hills, 155
Hansen, 160
Hazel, 150
Hector Bentonite Deposits, 167
Hematite, 52
Hercules, 118, 128
Hicks Perlite, 79
Hidden Hill, 120
Hidden Splendor, 20
Hidden Value, 151
High Hope, 114
Hinkley, 74
Hinkley Deposits, 77
Hoeger, 50
Hoerner-Ross, 155
Holliday, 111
Hollie Ann, 111
Home, 50, 104
Hooper, 112
Hoosier and Missouri(?), 41
Hoover, 113
Hope, 52, 67, 154
Howe, 152
Humbug, 145
Hummingbird, 109

Ibex, 123
Imperial Carbon Dioxide Gas Field (portion), 165
Imperial Salt Works, 185
Independence, 102
Indian, 15
Inerto, 167
Investment, 122
Iron Canyon Bentonite, 70
Iron Hat, 38, 131
Iron Victory, 132

J. H. B., 15
J. Juneau, 137
J. and L. Claim, 66
Jackass, 111
Jack Frost, 175
James-Thickstun, 11
Jet Black, 139
Johnson, 114
Joseph, 146
Josephine, 146
Josie Bishop, 61
Josie K, 108
Judy Ann, 43

Jumbo, 152
Jumpin, 62

Kalite, 181
Karma, 59
Kenyon, 44
Kern River, 28
Keystone, 48
Kidd, 50
Kimball, 74
Kings, 14
Kings Extension, 14
King Solomon, 45
Koehn, 71
Koski Group, 11
Kramer Hills, 51

L and L, 104
Ladd, 54
Lady Lou, 105
Lampis, 107
Lame Dog, 143
La Mountain, 135
Langtry, 144
Last Chance, 50
Last Chance Canyon, 75, 87
Lavic Mountain, 138
Layman, 40
Lead Capping, 148
Lead Mountain, 58
Lees Claims, 39
Lee Yim, 138
Leiser Ray, 149
Leviathon, 145
Lida, 50
Little Butte, 44
Little Charlie, 45
Little Kings, 15
Little Placer, 68
Lindsay, 27
Lismore, 48
Livingstone, 111
Lodestar, 52
Logan, 138
Log Cabin, 111
Long Beach Salt Co., 85
Long Shot, 116
Lopberg, 16
Loperna, 16
Los Angeles, 72
Lost Spanish, 135
Louisa, 123
Lucerne Valley Cinder Co., 181
Lucky Don Juan, 143
Lucky Jim, 102
Lutz, 43

Mabel, 122
Mable, 122
Mamie, 62
Margareta #1, 152
Markeson, 115
Marter-White, 79
Masson, 173
May Day, 152
McClaude, 40
McClintock, 113
McGilroy, 148
McKittrick, 21, 23, 24
McKittrick Mud Co., 21
McKnight Cornishstone, 171
Meir, 132
Meir Group, 132
Mexican, 13
Middle Butte, 53
Midway, 21
Midnight, 125
Miller, 61
Milwaukee, 50
Minnie Gold, 124
Mistake, 11
Mitchell, 126, 149
Mojave, 43
Mojave Desert Agricultural Gypsum, 75
Mojave Mining and Milling, 51
Mojave Rock Products, 69, 70
Monarch, 51
Monarch Minerals, 72
Moonlight, 61
Moreno, 140
Morongo King, 111
Morris Lode, 130
Mountain Flat, 128
Mountain King, 51
Mudd, 68
Mulcahy, 147
Mullet Island Salt Works, 185

Needles, 176
Nevins, 27
Newberry, 140
New Bessemer, 130
New Deal, 47
New Joshua, 81
North Group, 167
Northrup, 138
North Star, 51
NW Sweetser, 74
Nymph, 50

Odessa-Cuba-Baltic, 146
Old "Chilson", 43
Old Jackass, 42
Old Pete, 117
Old Spanish Victory, 135
Olony Lode, 114
Olympus, 127
Onyx, 169
Opal Extension and S. Opal, 81
Operator, 44
Operator Divide, 44
Orange Blossom, 40
Orange Blossom and Orange Blossom Extension, 105
Ord, 104
Ord Belt, 114
Ord Mountain, 104
Oregon, 146
Oriental, 146
Oro Grande, 49
Orphan Anne, 39
Oro Plata, 142
Osborn, 104
Overlook, 124
Owen Group, 16

Pacific Coast Borax, 161
Packard, 151
Painsville, 117
Palm, 162
Paradise, 127
Paradise Mountains, 154
Parrott and Allee Silica, 81
Pay Checker, 135
Paymaster, 138
Paymaster Group, 150
Pedry, 56
Phoenix, 44
Pine Ridge, 106
Pinmore, 44
Pisgah, 181
Piute, 50
Porterville, 25
Porterville Black Granite, 22
Possibility, 147
President, 150
Preston, 136
Pride of Mojave, 54
Prosperity-Lamar, 147
Pure Quill, 152
Purity, 23

Queen Esther, 51
Queenie, 81
Quien Sabe, 52

Railroad, 11
Rainbow, 150
Rainbow Lode, 118
Randall, 173
Rattlesnake, 15
Rattlesnake Group, 43
Rattlesnake Gulch, 162
Read Ridge, 139
Red Cloud, 146
Red Hill, 71
Red Hills, 115
Red Jacket, 146
Red Rose, 71
Red Rock Canyon, 87
Red Top, 168
Revier, 144
Rex, 27
Ribbon Rock, 189
Riley, 72
Rinker, 28
Rio Vista, 104
Rita, 13

Roaring Ridge, 87
Roosevelt, 47
Rosalia, 108
Rosamond, 62, 74
Rosamond Clay, 53
Rosamond Feldspar, 74
Rosamond Feldspar and Silica, 74
Rose and Monte Cristo, 111
Roseberry, 127
Ross, 89
Round Valley, 12
Rowe and Buehler, 190
Rust, 179

San Joaquin Valley, 22
San Antonio, 56
Santa Fe, 180
Scando, 128
Scheelite Queen, 61
Schmidt B. Copper, 38
Section 9, 152
Seisomite, 70
Shamrock #2, 57
Ship Mountain, 130
Siberia, 165
Sierra, 25
Silver Bow, 145
Silver Cliff, 143
Silver Contact, 145
Silver Dome, 55
Silver Dream, 135
Silver Dutchess, 124
Silver Gate, 112
Silver King, 146
Silver King-Oriental, 146
Silver Monument, 148
Silver Moon, 150
Silver Prince, 53
Silver Queen, 51, 128
Silver Reef, 143
Silver Wave, 142
Sinbad Group, 102
Single Standard, 51
Sioux, 146
Slocum Camp, 41
Smith, 38
Snowbird, 44
Snow Cloud, 128
Snow White, 71, 78
Soledad Extension, 51
Solomon, 88
South Group, 167
Stacsite, 168
Standard Group, 54
Standard Oil Pit, 29
Starbright, 153
Stevens, 70
Stewart, 111
Stillwell, 63
St. Louis, 146
Sue, 146
Sunnyside, 111
Sunrise, 118
Sunshine Claim, 43
Surprise, 16

Table Mountain, 14
Three Buttes, 72
Tiptop, 135
Todd, 20
Tolbard, 140
Tom Cat, 15
Tom Reed, 119
Total Wreck, 147
Townsend Feldspar and Silica, 74
Trade Rat, 41
Trail, 16
Trent, 53
Triangle Rock Products, Inc. and Grossardt, 86
Tropico Group, 50
True Friend, 150
Tulare, 25
Tungsten Flat, 153
Tungsten King, 61
Turtle, 139
Turtle Dove(?), 123

Udsogn, 151
Union, 147
Union Borax, 161
United States Borax & Chemical Corp., 68

Valverdo, 44
Van Buren Group, 130
Vanuray, 63, 73
Vaughn Marble, 174
Velvet White, 79
Verde Antique, 74
Verdi Development Co., 63
Veto, 145
Victorite, 83
Victorville Lime Rock Company, 76
Victory, 151
Vitrlite, 78
Voca, 147
Von Trigger, 109
Voss, 40
Vulcan, 113
Vulture, 114

Wall Street claims, 146
Walsh, 40
Ware, 123
War Manganese, 140
Waterloo, 147
Waterman, 58
Wegman Group, 59
Western, 52, 68, 161
Western States, 47
Whedon, 140
Wheel of Fortune, 116
White, 15
White Butte, 74
White Clay #1 and #2, 71
White Dollar, 152
White Horse, 27
White Lime Rock Company, 76
White Marble, 175
White Moon, 176
White Mountain Lime Co., 174
Whitmore, 54
Williams Brothers, 83
Windy, 44
Winkler, 53

Yankee Maid, 47
Yellow Dog, 53
Yellow Rover, 54
Yim-Wheelock, 117

Zenda, 146
Zuna, 38
Zuna A and B, 38
Zundra Group, 40

SYMBOLS

METALLICS

- chromium
- copper
- gold
- mongonese
- mercury
- tungsten
- uronium

INDUSTRIAL ROCKS AND MINERALS

- osbestos
- bituminous rock
- broken stone
- cloys
- cool and lignite
- decorative and dimension stone
- gypsum and gypsite
- magnesite
- sand and gravel

Deposits on Southern Pacific lands are indicated by tick marks

Limits of mapped area

TOWNSHIP DIAGRAM SHOWING SECTION NUMBERS

SOUTHERN PACIFIC

Mineral Commodity Map I*

Southern California

5 0 5

Miles

Contour interval - 200 and 500 feet with supplemental contours at 100 foot intervals

TRUE NORTH MAGNETIC NORTH 16°

APPROXIMATE MEAN DECLINATION, 1963

Topographic Base - Army Map Service Sheets:

Bakersfield (1960)	NI 11-1
Fresno (1958)	NJ 11-10
San Luis Obispo (1958)	NI 10-3
Santa Cruz (1956)	NJ 10-12

* Exclusive of oil and gas

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M
C32
no.95
Plate 1

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SOUTHERN PACIFIC

Mineral Commodity Map II

Southern California

5 0 5

Miles

Contour interval - 200 and 500 feet
with supplemental contours at 250 foot intervals

TRUE NORTH — 15½° — MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 1963

Topographic Base - Army Map Service Sheets:
Bakersfield (1960) NI 11-1
Los Angeles (1955) NI 11-4
San Bernardino (1959) NI 11-5
Trona (1960) NI 11-2

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SYMBOLS

METALLICS

- copper
- gold
- iron
- lead
- mongonese
- silver
- tungsten
- uranium
- zinc

INDUSTRIAL ROCKS AND MINERALS

- obrosives
- borite
- boron; sodium borate
- broken stone
- clays
- decomposed granite
- decorative and dimension stone
- dolomite
- feldspor
- fluorite
- gypsum and gypsite
- limestone
- magnesite
- marl
- mica
- pumice, pumicite, tuff, and volcanic cinders
- perlite
- pyrophyllite
- quartz
- solines
- sand and gravel
- semiprecious stones
- strontium

Deposits on Southern Pacific lands are indicated by tick marks

Limits of mapped area

QE89
A1
C32
no.95
Plate 2
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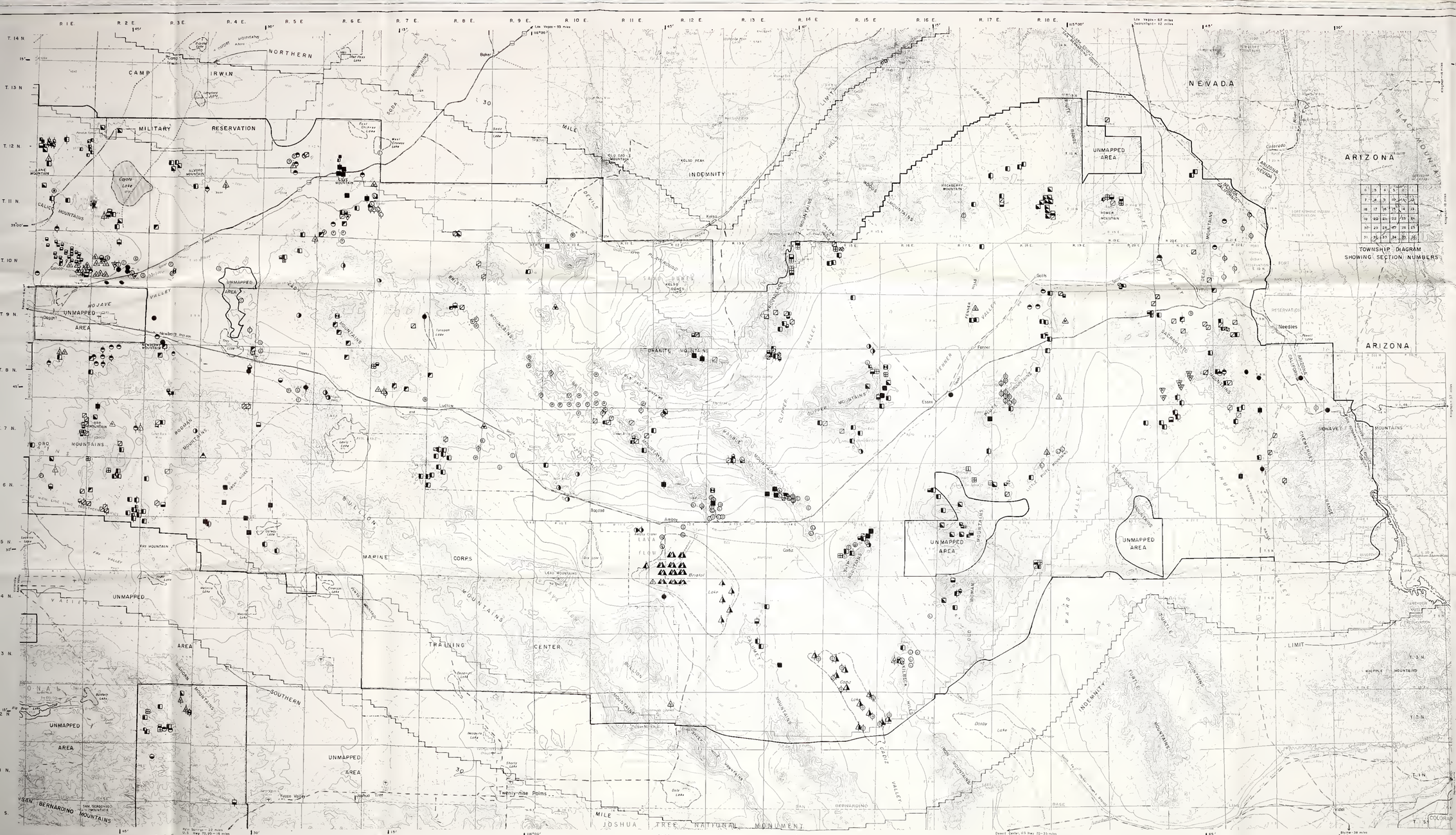

SYMBOLS

METALLICS

- antimony
- copper
- gold
- iron
- lead
- manganese
- mercury
- nickel
- silver
- tungsten
- uranium, thorium, and rare earths

INDUSTRIAL ROCKS AND MINERALS

- abrasives
- barite
- boron
- broken stone
- calcium chloride
- clays
- decorative and dimension stone
- dolomite
- feldspar
- fluorite
- gypsum and gypsite
- limestone
- magnesite
- mica
- perlite
- pumice, pumicite, tuff, and volcanic cinders
- quartz
- sand and gravel
- semiprecious stones
- sodium chloride
- strontium
- talc
- wollastonite

GEOTHERMAL SITES

- Thermal Well

Deposits on Southern Pacific lands are indicated by tick marks

Limits of mapped area

TOWNSHIP DIAGRAM SHOWING SECTION NUMBERS

SOUTHERN PACIFIC

Mineral Commodity Map III

Southern California

5 0 5

Miles

Contour interval - 200 and 500 feet with supplemental contours at 250 foot intervals

14½°

TRUE NORTH

MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 1963

Topographic Base - Army Map Service Sheets:
Kingman (1960) NI 11-3
Needles (1962) NI 11-6
San Bernardino (1959) NI 11-5
Trona (1960) NI 11-2

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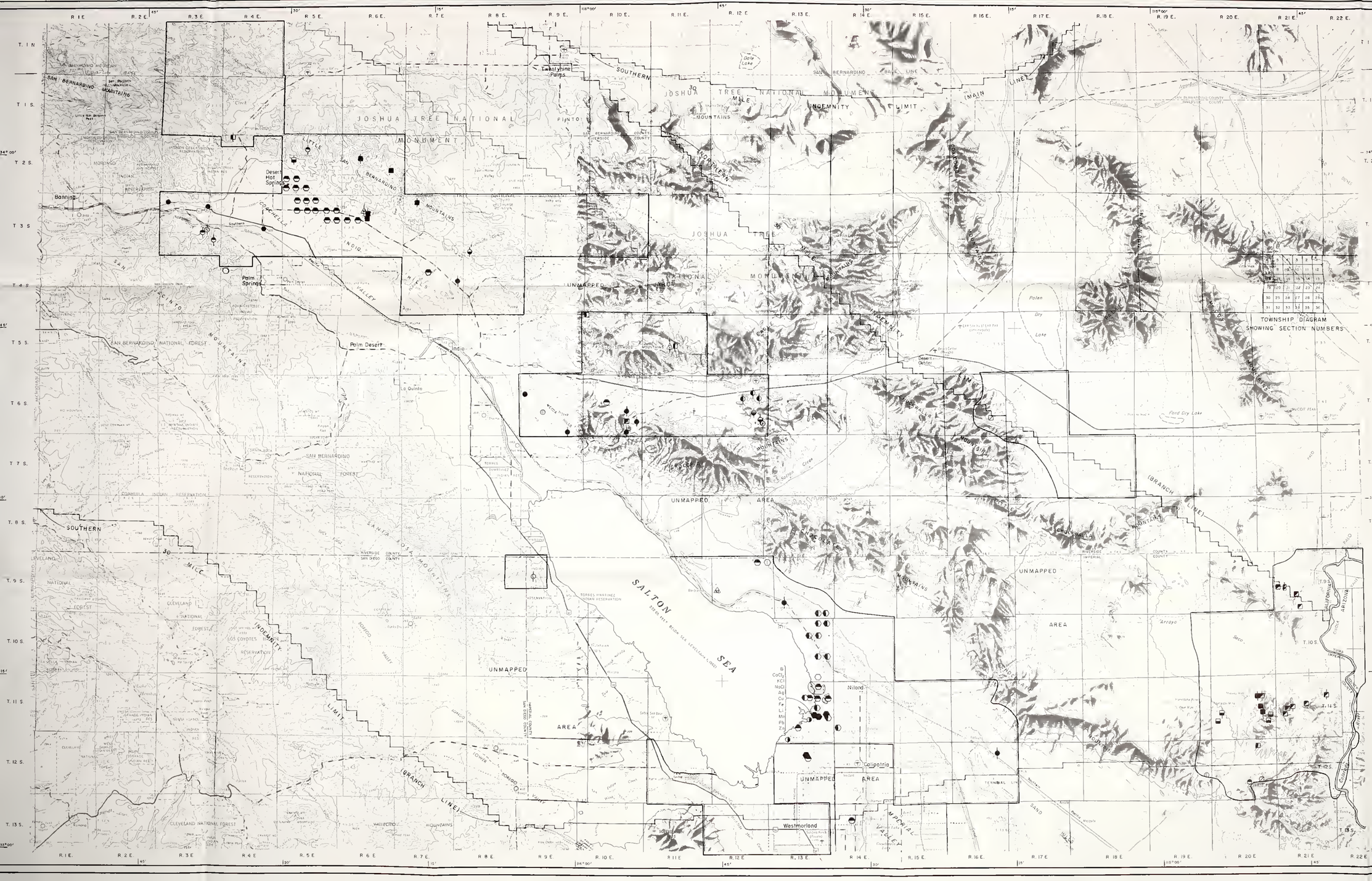

SYMBOLS

METALLICS

- copper (see also Geothermal Brine Well)
- gold
- iron (see also Geothermal Brine Well)
- mongonese (see also Geothermal Brine Well)
- silver (see also Geothermal Brine Well)

INDUSTRIAL ROCKS AND MINERALS

- broken stone
- carbon dioxide gas field
- clays
- decomposed granite
- decorative and dimension stone
- fluorite
- limestone
- mica
- pumice
- quartz
- sand and gravel
- silica
- sodium sulphate

TOWNSHIP DIAGRAM SHOWING SECTION NUMBERS

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

GEOTHERMAL SITES

- Geothermal Brine Well
- B boron
- $CaCl_2$ calcium chloride
- KCl potassium chloride
- NaCl sodium chloride
- Cu copper
- Fe iron
- Pb lead
- Li lithium
- Mn mongonese
- Ag silver
- Zn zinc
- Thermal Wells
- Mud Volcanoes and Mud Pots
- Hot Springs

Deposits on Southern Pacific lands are indicated by tick marks

Limits of mapped area

SOUTHERN PACIFIC

Mineral Commodity Map IV

Southern California

5 0 5

Miles

Contour interval - 200 and 500 feet with supplemental contours at 100 foot intervals

14½°

TRUE NORTH

MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 1963

Topographic Base - Army Map Service Sheets:
San Bernardino(1959) NI 11-5
Salton Sea(1955) NI 11-9
Needles(1956) NI 11-6
Santa Ana(1960) NI 11-8

Edition of 1964

Date Compiled 1963

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